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FOOT-AND-MOUTH DISEASE COMMITTEE.

REPORT

OF THE

DEPARTMENTAL COMMITTEE

APPOINTED BY THE

PRESIDENT OF THE BOARD OF AGRICULTURE AND FISHERIES

TO INQUIRE INTO

FOOT-AND-MOUTH DISEASE.

Presented to Parliament by Command of His Majesty.



LONDON:

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REPORT

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MINUTE APPOINTING THE COMMITTEE.

I hereby appoint a Committee to inquire into the circumstances of the recent outbreaks of Foot-and-mouth Disease and to consider whether any further measures can be adopted to prevent their recurrence.

The Committee will be constituted as follows:—

The Right Hon. SIR AILWYN FELLOWES, K.C.V.O.

SIR C. D. ROSE, Bart., M.P.

SIR HARRY C. W. VERNEY, Bart., M.P.

SIR J. BOWEN BOWEN-JONES, Bart.

CHARLES BATHURST, Esq., M.P.

WILLIAM FIELD, Esq., M.P.

JOHN HINDS, Esq., M.P.

G. R. LANE-FOX, Esq., M.P.

RICHARDSON CARR, Esq.

MAJOR E. M. DUNNE.

E. E. MORRISON, Esq.

E. M. NUNNELEY, Esq.

And I hereby appoint the Right Hon. SIR AILWYN FELLOWES to be Chairman of the Committee and Mr. W. H. F. LANDON, of the Board of Agriculture and Fisheries, to be its Secretary.

(Signed) WALTER RUNCIMAN,

President of the Board of Agriculture
and Fisheries.

17 November 1911.

REPORT.

TO THE PRESIDENT OF THE BOARD OF AGRICULTURE AND FISHERIES.

SIR,

THE Departmental Committee appointed by you on 17th November 1911, to inquire into the circumstances of the recent outbreaks of foot-and-mouth disease, and to consider whether any further measures can be adopted to prevent their recurrence, beg to inform you that they have completed their inquiries, and submit their Report.

The Committee have thought it advisable, when considering the introduction of disease through the medium of imports, to extend their inquiries to anthrax, as any measures which would be preventive of anthrax would also be effective against foot-and-mouth disease (85, 86), (356 to 358).

The Committee have been anxious to take the evidence and issue their Report as speedily as possible, hoping to allay the feeling of anxiety which the somewhat frequently recurring outbreaks in 1911 had occasioned among agriculturists.

The Committee commenced taking evidence on 25th January 1912, and have examined the following Witnesses:

1. Jan. 25. Mr. A. W. ANSTRUTHER, C.B., Assistant Secretary, Animals Division, Board of Agriculture and Fisheries.
2. { Jan. 26. } Mr. S. STOCKMAN, Chief Veterinary Officer, Board of Agriculture
 { Feb. 12. } and Fisheries.
3. Feb. 12. Sir E. CLARKE, Bt., Superintending Inspector, Animals Division, Board of Agriculture and Fisheries.
4. { Feb. 12. } Mr. W. W. SMART, I.S.O., Superintending Veterinary Inspector,
 { Feb. 13. } Board of Agriculture and Fisheries.
 { May 10. }
5. Feb. 13. Mr. E. RAWLE, Manor Farm, Middlezoy, Somerset. Had the disease on his farm, 1911.
6. Feb. 13. Mr. A. C. WILD, M.R.C.V.S., Woking. Representing the Surrey County Council Executive Committee.
7. Feb. 22. Mr. C. E. TANKARD, Surveyor, H.M. Customs and Excise.
8. Feb. 22. Sir JOHN McFADYEAN, Principal, Royal Veterinary College, Camden Town.
9. Feb. 23. Prof. J. PENBERTHY, Dean Hall, Newnham-on-Severn. Representing the Central Chamber of Agriculture and the Bath and West and Southern Counties Society.
10. Feb. 23. Mr. R. WAITE, Green Trees, Duffield, Derby. Representing the Derby County Council Executive Committee.
11. Feb. 29. Mr. A. MANSELL, Shrewsbury. Representing the Royal Agricultural Society of England.
12. Feb. 29. Supt. W. H. WILLIAMS, Bridgwater. Representing the Somerset County Council Executive Committee.
13. Feb. 29. Mr. J. EGERTON QUESTED, Cheriton, Folkestone. Chairman, Kent County Council Executive Committee.
14. Feb. 29. Mr. R. CANTRELL, I.S.O., Department of Agriculture and Technical Instruction, Ireland.
15. Mar. 1. Mr. O. CAYGILL, Master Stevedore, The United Shipping Company, 108, Fenchurch Street, London.
16. Mar. 1. Prof. J. SHARE JONES, F.R.C.V.S., Liverpool University,
17. Mar. 1. Capt. E. NORTON, Marine Superintendent, Messrs. Cayzer Irvine & Co., 115, Leadenhall Street, E.C.
18. Mar. 5. Mr. A. SEYMOUR-JONES, Pendower, Wrexham. Leather Manufacturer.
19. Mar. 6. Mr. W. C. BARLING, M.R.C.V.S., Newnham-on-Severn.
20. Mar. 6. Mr. H. C. SOMERVILLE, Shipowner, Messrs. Gibson & Co., Leith.
21. Mar. 6. Mr. R. MORRIS, West Hallam, Derby. Had the disease on his farm, 1911.

22. Mar. 6. Mr. J. McPHAIL, M.R.C.V.S., Chief Foods Inspector, Hull.
23. Mar. 6. Mr. JAMES CROWHURST, M.R.C.V.S., Canterbury. Representing the Canterbury Farmers' Club.
24. Mar. 6. Mr. MARK FURNIVAL, 24, Camden Street, Birkenhead.
25. Mar. 14. Mr. CHARLES DOUGLAS, Auchlochan, Lesmahagow. Representing the Scottish Chamber of Agriculture.
26. Mar. 14. Col. B. B. SAPWELL, Aylsham, Norfolk. Representing the Norfolk Chamber of Agriculture.
27. Mar. 14. Prof. H. R. PROCTER, The University, Leeds. Principal, Leather Industries Laboratories.
28. Mar. 26. Prof. Dr. D. A. DE JONG, Leiden, Holland,
29. Mar. 26. Mr. FRANK MATTHEWS of Thornton & Co., 7, Princes Street, Hanover Square.
30. Mar. 26. Dr. J. GORDON PARKER, Principal, Leather Sellers' Technical College, 176, Lower Bridge Road, London.
31. Mar. 27. Prof. Dr. B. BANG, Copenhagen, Denmark.
32. Mar. 27. Sir WM. HOWELL DAVIES, M.P., 3, Whitehall Court, S.W. Senior Partner, Cox's Successors, Ltd., Bristol. Gave evidence concerning Leather Trade.

Dr. Bang, the Chief Veterinary Officer and Adviser to the Minister of Agriculture in Denmark, and Dr. de Jong, holding a similar position in Holland, most kindly acceded to the wish of the Committee to come over and give evidence.

Six persons on whose farms initial outbreaks of foot-and-mouth disease occurred during 1911 were invited to give evidence, but four of them did not wish to attend before the Committee. The executive committees of County Councils in those five counties where disease occurred during 1911 were also invited to give evidence, and three of them sent representatives. Representatives were invited, but not sent, from the Highland and Agricultural Society of Scotland and the County Councils Association.

History of the Disease in Great Britain.

Foot-and-mouth disease is first recorded as existing in Great Britain in 1839(4). As the landing of animals was at that time entirely prohibited it must be inferred that its introduction was by mediate contagion (257). It occurred in Smithfield Market, London, and spread to various centres in England, Scotland, and Ireland, was prevalent till 1842, and then declined. It again became prevalent from 1845 to 1847; from 1849, when it extended all over the Kingdom, to 1852 (11) (3720); from 1861, when an outbreak occurred in the Royal Agricultural Society's showyard at Battersea, to 1863; from 1865 to 1866, when the restrictive measures adopted for cattle plague, which then existed, served as a check on the disease; from 1869, when the disease was first scheduled by Act of Parliament, to 1872; from 1874 to 1875; from 1876 to 1878 (3720), when cattle plague also existed; in 1879, when for the first time severely restrictive measures were taken respecting it under the Diseases of Animals Act of 1878, and proved an effective check (15); from 1880, when disease spread from a foreign animals' landing place (137), to 1883, and declined during 1884-5, to one outbreak only in 1886. The only record of the existence of the disease in the Isle of Man was during 1883, when five cases occurred. There is also no record of the disease having appeared in Ireland since 1883-4 (16 to 27) (3719). Owing to memorials by agriculturists to the Privy Council, the Act of 1884 was passed amending that of 1878, for the purpose of more effectively dealing with foot-and-mouth disease.

During the years 1887 to 1891 the country was free from the disease (31), (51 to 54). It was supposed to have been introduced in 1892 by animals from Denmark (57) (139), and 95 outbreaks occurred. In this year slaughter was first resorted to by the Board of Agriculture for preventing the spread of foot-and-mouth disease.

There were two outbreaks in 1893 and three in 1894. During the years 1895-9 the country was again free from the disease (56). The Act of 1896 required that all animals brought to this country, the landing of which was not prohibited, should be slaughtered at the port of landing, and since then no such animals have been introduced into Great Britain, except for special purposes, *e.g.*, for Zoological Gardens. In 1900 21 outbreaks occurred (57) (60); in 1901 12 outbreaks (63); and in 1902 one outbreak (64). The last two outbreaks of the disease in the Channel Isles occurred on 19th April and 13th May 1902.

During the years 1903-1907 there were no outbreaks (28), (34, 35), (65).

In 1908 three outbreaks occurred at Edinburgh, where foreign hay was suspected as being the cause of the disease (93), (161), (193). This led to the issue of the Foreign Hay and Straw Order of 1908; 1909 was free, but in 1910 there were two outbreaks at Ripon, Yorks (66 to 68).

In 1911 there were six initial outbreaks.

The first was reported on 9th March at Chobham, Surrey; infection did not spread from the premises, and all restrictions were removed on 15th April. The second outbreak was reported on 3rd July at Hounslow, Middlesex. Disease spread to premises $\frac{1}{4}$ mile distant, where a case occurred on 6th July, and to premises 4 miles distant, where another case occurred on 7th July; all restrictions were removed on 8th August. The third outbreak was reported on 17th July at Udimore, East Sussex, and spread to two other premises near; all restrictions were removed on 23rd August. The fourth outbreak was reported on 21st August at West Hallam, Derby, did not spread, and the restrictions were withdrawn on 30th September. The fifth outbreak, reported on 28th September, at Middlezoy, Bridgwater, spread to nine other premises. All restrictions were removed on 8th December. The sixth outbreak reported on 6th December at Martock did not spread, and the restrictions were withdrawn on 8th January 1912 (69 to 72), making a total of 19 outbreaks for 1911.

In 10 of the 21 years, from 1892 to the present time, the disease has existed in Great Britain, the total number of outbreaks in that period being 158, but of these 133 occurred during the first 10 years, and only 25 during the last 11 years. It would thus seem probable that the disease is more under control now than formerly.

Description of Disease.

Foot-and-mouth disease is highly infectious (429) and contagious, (2526) (2760), and attacks cattle, sheep, swine (404), goats, deer (2760), etc. Horses, dogs, and cats have been reported to be affected; it has also been known to affect human beings. It does not arise spontaneously, and every case of foot-and-mouth disease must be attributed to a pre-existing case of the disease. The incubation period, which is by no means clearly established, may be from one to ten days (2581), (5717), the more usual period being two to five days.

The disease causes great pain, the animal limps badly on the affected limbs, shakes its feet, prefers to lie down, refuses food, and a milch cow gives less milk. Cattle, when the disease is advanced, make a characteristic smacking noise with their lips; saliva hangs from the mouth in strings; blisters or blebs form in the mouth and between the toes, and the virus is exuded from them. It has been demonstrated that 1-300th part of a drop of liquid from one of these blisters introduced into the blood of an animal may successfully infect it with the disease (2525). This disease is so serious and so infectious that there is every reason for dreading it, and on the slightest suspicion stock owners should, without a moment's delay, give notice of it to the police. The virus of foot-and-mouth disease cannot be seen under the most powerful microscope obtainable, and cannot be arrested by any proved process of filtration. There does not appear to be any definite knowledge of the length of time during which it may remain active outside the body of an animal. Those who have had practical experience when the disease was prevalent among stock in this country, consider (5721) that the period does not usually exceed one month, and when the virus is exposed to sun and light is much shorter.

Experimentally it has been found to remain active for a period not exceeding four months (412). It has, however, been stated by one of the expert witnesses that manure may undoubtedly remain infective for that time (6700), and he also considers, from deductions he arrived at from his experience of certain recurring outbreaks, that its infectivity under conditions favourable to it may continue for 12 months (2537).

Experiment and Research into Foot-and-Mouth and other Diseases.

There is but little exact knowledge even among the greatest veterinary experts as to the nature, origin, and means of transmission of this disease; the Committee feel, therefore, that it is most important to obtain further information on the subject through the medium of special and thorough investigation, experiment, and research. They consequently welcome the appointment of a scientific Committee to study it in India, and are of opinion that a liberal grant from the Treasury should be asked for,

in order that the inquiry should not be hampered for want of funds or by any limitation of time.

The advisability of establishing an experimental station for foot-and-mouth disease in this country, or on an adjacent island, has been considered by the Committee. They, however, cannot approve of this proposal. Whatever precautions were taken the Committee would be opposed to the maintenance here of a permanently infected centre with such a highly infectious and contagious disease, involving a source of danger to the stock of this country. The Committee, however, suggest that mutual benefit might result from the establishment elsewhere of an international experimental station fully equipped for research in diseases of animals, and they strongly recommend that continental, and possibly other, countries should be approached with a view to co-operation in this matter.

Preventive Inoculation and Experimentation with Virus of a Dangerous Nature in Great Britain.

The Committee have had evidence laid before them that the immunisation of animals against foot-and-mouth disease by artificial methods has been successfully carried out, and further that the process might be considerably improved. They in no way desire to recommend that preventive inoculation should take the place of slaughter, when slaughter is considered necessary in the case of animals which have been exposed to the more serious risks of infection. But there are frequently some which have not been so exposed, yet which it is thought desirable to slaughter, as owing to contiguity, the risk of the disease ultimately spreading to them is too great to be incurred. Since there must be a reasonable limit to the number of animals slaughtered in such circumstances, the Committee feel that it is well worthy of consideration whether animals over a considerable area round an outbreak might not, with advantage, be immunised by the injection of a preventive serum, provided that the process does not involve developing in them even a mild attack of the disease. If satisfied that such a process be found to be desirable, the Board of Agriculture and Fisheries should be empowered to enforce such inoculation when considered necessary, not merely in connection with foot-and-mouth disease, but in reference to other diseases of a similar character. The Committee are aware that the preparation of such sera might in certain cases involve the maintenance of an especially dangerous disease in laboratory animals. They do not necessarily suggest, however, that the sera for such diseases should be prepared in this country, when the diseases to which this recommendation is applicable are not prevalent here, but that arrangements might be made to obtain supplies from countries in which they are already rife. They understand that some methods of giving immunity, although very useful under certain circumstances, are dangerous, as they involve the subjection of the inoculated animal to a type of the disease which, although mild in character, may be communicated in a more serious form to others. Owing to the fact that some stock-owners, when the country is threatened by an epizootic, might resort to such methods, thereby endangering the herds of their neighbours, the Committee are of opinion that the Board of Agriculture and Fisheries should be empowered to prohibit inoculation with dangerous viruses, except under circumstances which appear to the Board to render the operations free from danger.

With regard to experimentation on animals with dangerous viruses or the preparation from them of vaccines, it was brought out in evidence that there is nothing to prevent anyone importing such viruses and inoculating animals with them. The Committee, while wholly in favour of the investigation of disease by experimental methods, and recognising the enormous benefit which the agricultural industry has already derived from such investigations, and admitting moreover that there is no intentional carelessness on the part of those who make use of viruses for either of the above purposes, express the opinion that all such work in relation to diseases of animals should be carried out under conditions which satisfy the Board of Agriculture and Fisheries.

Origin of Outbreaks.

Since 1892 no direct origin has been traced in the case of any of the initial outbreaks in Great Britain, with the exception of that at Edinburgh in 1908, which was attributed to foreign hay (63), (122 to 126), and none of the witnesses have been able to satisfy the Committee as to their origin. As the disease cannot arise spontaneously (28), (44),

(2760), (34, 35), (40), (47), and as its virus under ordinary conditions does not long remain active, and as since 1897 the importation of infected animals has been prohibited, it may fairly be assumed that the virus causing outbreaks in Great Britain has been imported by mediate contagion. Whenever outbreaks have occurred in this country disease has been more prevalent on the Continent. As it may be said to have been very rife there recently, the Committee feel that Great Britain is fortunate in not having experienced a larger number of outbreaks when the constant general traffic to this country is considered.

Means by which the Virus of Disease may be Imported.

Any imports, such as hides, etc., which may have formed part of an infected animal or been exposed to infection, and other goods (such as grain, foodstuffs, etc.) which may have been in contact with them, must be considered dangerous if such articles are subsequently brought into contact with susceptible animals in this country.

The Committee recognise that it is impracticable, even if it is not impossible, to erect an impregnable barrier against the introduction of disease, but it is agreed that the risk is greater with certain articles; those most open to suspicion being (47)—

- (a) Hay and straw.
- (b) Milk and milk products.
- (c) Hides and skins, heads and feet, carcasses of calves in skins, vaccine seed lymph.
- (d) Hoofs, horns, bones and other animal offals.
- (e) Persons and their clothing.

(a) The importation, from certain scheduled countries, of hay and straw for use as fodder was prohibited by the Foreign Hay and Straw Order of 1908. By an amending Order of 1912 this importation is now prohibited except from such countries as are scheduled as being free from disease. The amount of hay imported in 1910 was 99,015 tons as compared with 97,424 tons in 1907, when there were no restrictions. Respecting hay and straw used for packing, it appears that over 60 different imported articles are so packed, and it cannot be disputed that a large proportion of this packing ultimately reaches the farm as manure.

The Committee have given the subject their careful consideration, and the only conclusion they can arrive at is that this packing constitutes a source of danger. In view, however, of the serious dislocation of general trade which it would entail, they are not prepared, until there is further evidence against it, to advise its prohibition.

The Committee, therefore, recommend that agriculturists and persons using such hay and straw should be warned by the Board of Agriculture and Fisheries through Chambers of Agriculture and Commerce, and local authorities, and in any other way the Board may think advisable, of the element of danger it contains, and of the risk of allowing it to come in contact with any animals, and that where possible it should be burned.

(b) Milk and milk products: Fresh milk during 1910–1911 was imported from Holland to Harwich and London, and from France to Southampton, in cans or drums in small but variable quantities, the total amount being 1,969 cwts., value 954*l.*, in 1910, and 11,215 cwts. in 1911 (90), (420), (3648).

The danger with regard to foreign milk is the possibility of its reaching swine through the “pig pail.” The Committee consider that this danger might be overcome if such milk were required to be heated to 60 degrees centigrade before being dispatched to this country (525). Not only would this be a safeguard against foot-and-mouth disease, but also against tuberculosis.

(c) Carcasses of calves in skins are imported at the ports of Harwich, Hull, and Leith. They are indexed in the Customs Import List as meat, and not separately shown. It has been ascertained that the imports for 1911 were at Harwich 104,102 carcasses, of which about 1,000, or 1 per cent., had their skins on; they were consigned mainly to Sheffield, Leeds, Birmingham, and Cardiff, their average weight being 50 lb.

At Hull 11,137 carcasses were landed, of which 7,939 were in their skins; 71 per cent. of this number were very young calves. Average value, in skin, 26*s.*; out of skin, 17*s.* 6*d.* They were distributed from Hull all over the United Kingdom, more especially to large Midland towns, and also to Ireland and Scotland.

At Leith 4,000 carcasses were landed, of which 90 per cent. had their skins on; the average value was 50s., and all went to butchers in Edinburgh.

Many witnesses consider that these carcasses in skin present a danger, and with this view the Committee agree.

As only 12,500 calves, or 15 per cent. of the total, appear to have been imported in their skins, the Committee recommend that the Board of Agriculture and Fisheries be asked to arrange for the discontinuance of the practice, as they do not consider this would materially interfere with the trade.

(c) Hides and Skins: The Committee endorse the opinions of many witnesses, that hides and skins, with or without wool or fur, from an infected country, must be a considerable danger, not that they are likely to be placed in contact with a susceptible animal, but that in transit, foodstuffs, carried in or on the same ships, quays, lighters, railway wagons, carts, etc., may become contaminated, either by contact with them, or by being subsequently carried by the same agency, or through the clothes of stevedores discharging ships, or by porters handling these goods.

The hides and skins undressed imported during 1910 were of the value of 12,882,326l.

Dry raw hides were shipped from 91 foreign countries to 21 British ports (45 per cent. London, 20 per cent. Hull, 18 per cent. Liverpool, 10 per cent. Southampton).

Wet raw hides and pieces thereof were shipped from 62 foreign countries to 28 British ports (45 per cent. Liverpool, 20 per cent. London).

Goat-skins, undressed, were shipped from 64 foreign countries to 15 British ports (75 per cent. London, 15 per cent. Liverpool, 12 per cent. Southampton).

Sheep-skins with wool on were shipped from 60 foreign countries to 16 British ports. [For details as to above see Appendix to Evidence.]

The Committee have considered this subject with respect to the danger of importing anthrax as well as foot-and-mouth disease, and are of opinion that to require the disinfection before shipment of all such articles as hides, skins, bones, etc., which are most likely to be contaminated with disease, would be its natural solution. It is generally conceded that a disinfectant that will destroy the spores of anthrax would certainly destroy the virus of foot-and-mouth disease.

With regard to hides and skins: These may roughly be divided into—

(1) Wet hides and skins.

(2) Dry hides and skins.

(1) It was given in evidence that there was less danger from the importation of wet salted hides and skins, with regard to anthrax, than from dry hides and skins (4724); but it seems impossible that any practical proposition with regard to their earlier sterilization could be effectually imposed by law.

The Committee would, however, call attention the fact that if the practice of washing the insides of hides and skins, when flayed from the animal, with a solution of $\frac{1}{2}$ per cent. of formic acid, or salt and cold water, before salting were adopted, the germs of foot-and-mouth disease would be destroyed (4722), and they trust that this method of diminishing the risk of infection may be made effective by international co-operation, and be generally acted upon by foreign exporters.

(2) With reference to dry hides and skins: The Committee have been informed of a process (consisting of their immersion for 24 to 48 hours in a solution of formic acid mixed with mercuric chloride, with a subsequent salting), which is recommended as one that will effectually destroy anthrax spores, and will not injuriously affect the hides. The process has been favourably reported on by an eminent bacteriologist (6060), (6065), and by experts in the tanning industry, who describe it as the most satisfactory method of sterilizing hides of which they have experience (6063). It has been stated that if it were possible to sterilize all anthrax contaminated imports before shipment, outbreaks of that disease would be greatly lessened in this country, and the Committee consider that the trades concerned might reasonably be asked to co-operate in order to effect such a reform.

(d) Hoofs, horns, bones, and other animal offals: The Committee are of opinion that there is a danger of introducing anthrax when these articles are imported from infected countries, and recommend that they should, as far as possible, be subjected to effectual sterilization before being used in this country.

The Committee recognise the great interests concerned in our shipping, which carries 70 per cent. of the world's sea-borne traffic, and by which undressed hides and skins to the value of about 13,000,000l. were imported in 1910 for our tanning industries, and realise the fact that this country cannot move alone in this matter, as by so doing our trade might be handicapped unduly.

The Committee consider that other importing countries cannot fail to be interested in this subject, and that they would assist in determining what is the most effective sterilizing agent for this purpose, and that when this has been agreed on, they would co-operate with this country in adopting its use.

The Committee suggest that on this subject Great Britain might take the initiative and arrange for a practical experiment to take place at selected ports. If this proved a success, in that the cost was not prohibitive, the hides or skins were not damaged, and the sterilization was effective, good grounds would be established for suggesting uniform international action. In any such action ample notice should be given to enable persons concerned in the trade to adapt their arrangements to the new requirements.

The Board of Trade are also concerned in this question, and the Committee think that that department might be asked to—

- (1) Arrange international conferences.
- (2) Approach the United Trade Federation in the various European and American countries representing the affected trades.
- (3) Approach the various international chambers of commerce and agricultural societies.
- (4) Advise and assist the Foreign Office in its *pourparlers* with the Foreign Governments to arrive at a common line of action.
- (5) Instruct the exporters in the British dependencies and treaty ports in the approved method of disinfection.

Moreover, the Committee think that all shipments of hides and skins should then be accompanied by a sworn certificate as to their effective disinfection, which should be attached to the bill of lading after being signed by the consul.

Pending the adoption of some such process of sterilization as that described above, the carriage on board ship of hides and skins on the top of a general cargo should be prohibited.

The Committee have been informed that an international veterinary congress is to be held in Great Britain in 1914, and they urge that the subject of foot-and-mouth disease should there receive serious consideration, especially with a view to the Governments of infected European countries taking joint action to endeavour to stamp out the disease on the Continent.

It is hoped that the information which will be obtained through the scientific inquiry about to take place in India will be then available, and form a valuable addition to the stock of knowledge for the discussion of this disease which is creating great havoc among the flocks and herds of the world.

Veterinary Inspectors of the Board of Agriculture and Fisheries and of Local Authorities.

In the course of the inquiry the Committee have received evidence as to the methods of appointment and qualifications of veterinary inspectors under the Diseases of Animals Acts.

The Board of Agriculture and Fisheries require that their veterinary inspectors, after taking their diploma at the Royal Veterinary College, and after a probationary period of two years, shall pass further written and practical examinations in advanced pathology and epizootiology, which require candidates to engage in post-graduate study, and avail themselves of post-graduate teaching, the retention of their services by the Board being conditional on the examinations being passed. Special facilities are given for the attendance at a post-graduate course.

The veterinary inspectors of local authorities are necessarily chosen, as a rule, from the available veterinary surgeons engaged in private practice, often considerable, in the locality.

It naturally follows that in the great majority of cases these latter officers are unable to spare the time necessary for post-graduate training.

It is clear that post-graduate training is appreciated by the veterinary profession at large, inasmuch as post-graduate classes were regularly conducted at one at least of the veterinary colleges, and that no less than 300 veterinary surgeons at home and from the colonies have availed themselves of these classes in the last seven or eight years (2572.)

Moreover, the diploma-granting body of the veterinary profession—the Royal College of Veterinary Surgeons—has been prevented from instituting a post-graduate

diploma in veterinary science and practice owing only to want of funds (1036), (1039).

In considering the question of the qualifications which should be possessed by veterinary inspectors of local authorities, the Committee are of opinion that, in view of the progress of veterinary science in its application to the control and eradication of contagious diseases, the subjects grouped under epizootiology can now only be adequately taught in post-graduate courses of a practical kind.

In expressing this view the Committee have no desire to minimise the valuable services which the veterinary profession have rendered in the suppression of contagious diseases of animals, and in this connection they recognise to the full the fact that the remuneration offered to veterinary inspectors by local authorities is insufficient to attract the services of specially qualified men. The Committee therefore strongly recommend that the appointment of all veterinary inspectors of local authorities should be in accordance with uniform rules relating to qualifications to be laid down by the Board of Agriculture and Fisheries.

The Committee are impressed with the importance of the fact that in dealing with contagious diseases, especially those which are known to spread rapidly, an early and accurate diagnosis is essential to success, and since it was stated in evidence that it would not be possible for the Board of Agriculture and Fisheries to maintain a sufficient staff to deal with such epizootics as cattle plague, foot-and-mouth disease, etc., supposing they broke through the first line of defence and spread over the country, and that under a misfortune of this kind the Board would have to rely, to a very great extent, on the veterinary organisations set up by the various local authorities under the Diseases of Animals Acts, the Committee think it imperative that arrangements should, if possible, be made, whereby every local authority or group of local authorities under the Diseases of Animals Acts should have at their disposal the services of a chief veterinary officer with special qualifications in veterinary science and practice.

This officer should be recognised as the chief veterinary officer for the administrative area for which he is appointed, and should not be in private practice, but should devote his whole time to work under the Diseases of Animals Acts. It is suggested that his duties should include inspecting, directing, and reporting on the work done by the ordinary veterinary inspectors of the district, making veterinary examinations and reports to the Board of Agriculture on reported outbreaks of swine fever and other diseases, and be available by the Board of Agriculture for organising and carrying out protective measures on the outbreak of any epizootic diseases.

In the smaller administrative areas the appointment of this officer might enable local authorities to dispense with one or more of their present officials.

His appointment and dismissal should be subject to the sanction of the Board, and his salary, which should be large enough to attract the best men in the profession, should be provided, say, as to three-fourths by the Board, and one-fourth by the local authority.

Finally, we would strongly urge the desirability of immediate steps being taken towards instituting, by the Royal College of Veterinary Surgeons, a post-graduate qualification in veterinary science and practice.

General.

As it is of vital importance that the Board of Agriculture should have immediate notice of any outbreak of the disease, and there is some danger that an initial case might not be recognised either by the owner of the animal affected or by the veterinary surgeon called in (neither of whom would probably ever have seen the disease), the Committee suggest that it might be well for the Board to issue occasionally (say every five or seven years) to all veterinary surgeons and stockowners a circular describing shortly the symptoms of the disease.

The Committee are also of opinion, however, that an obligation immediately to report any observed case of the disease should be imposed not only, as at present, on owners of stock, but also on all persons employed as knackers or slaughterers.

The Committee have considered the advisability of requiring the cleansing and disinfection of holds of ships, lorries, and railway wagons in or on which hides and skins from infected countries have been carried.

The Committee consider that if such hides and skins are sterilised prior to shipment, the occasion for such cleansing and disinfection will not arise.

The Committee heard in evidence that it was customary to sweep out the holds of ships when a cargo was discharged. These sweepings are a source of danger on account of the articles which are brought from foreign countries. They are, as a rule, burned or thrown out to sea, but there are cases where the sweepings are landed and carted away by the local authority.

This action the Committee consider to be a source of danger, and they recommend that the sweepings should not be allowed to be landed, but should be destroyed or thrown overboard without delay.

In view of the tendency abroad to exaggerate the extent of foot-and-mouth disease, when it occurs in Great Britain, with consequent restriction of trade, it is desirable that the Government should, through the British consuls, clearly intimate its actual extent to foreign countries.

Administration.

The Committee consider that our consuls should let it be known in countries to which they are accredited that though Great Britain has no wish to prohibit imports, still if it is proved in the future that articles brought from infected countries were the cause of outbreaks of foot-and-mouth disease or anthrax, this country may be compelled, in its own interest, to take stringent action with regard to those articles.

The Committee wish to record their entire agreement with the evidence they have received of the necessity of maintaining the restrictions imposed on the import of foreign animals (Foreign Animals Order, 1910), and consider that it is essential that the landing of animals from countries infected with foot-and-mouth disease should not be permitted. They also approve of the provisions of the Foreign Hay and Straw Order of 1908, as amended by that of 1912.

The Committee would also like to place on record their approval of the procedure adopted by the Board of Agriculture and Fisheries in dealing with outbreaks of the disease, and consider that the freedom of this country in recent years from widespread epidemics is due to the regulations so admirably carried out by the officers of the Board, and those of the local authorities.

A great deal of evidence went to prove the good feeling that exists between the officials of local authorities and of the Board. They have worked harmoniously together and with the agriculturists concerned, and although there may be instances of hardship, it is recognised that this must be unavoidable if such a disease is to be kept in check.

The Committee think that every encouragement should be given to the Board to continue a policy which has proved so successful.

The Committee also wish to express their sincere appreciation of the hard work and energy displayed by their Secretary, Mr. W. Landon.

We have the honour to be,

Sir,

Your obedient Servants,

AILWYN FELLOWES.

C. D. ROSE.

HARRY C. W. VERNEY.

J. BOWEN BOWEN-JONES.

CHARLES BATHURST.

WILLIAM FIELD.

JOHN HINDS.

G. R. LANE-FOX.

RICHARDSON CARR.

E. M. DUNNE.

E. E. MORRISON.

E. M. NUNNELEY.

May 22, 1912.

W. H. F. LANDON (*Secretary*).



XKYE
FOOT-AND-MOUTH DISEASE COMMITTEE.

REPORT

OF THE

DEPARTMENTAL COMMITTEE

APPOINTED BY THE

PRESIDENT OF THE BOARD OF AGRICULTURE AND FISHERIES

TO INQUIRE INTO

FOOT-AND-MOUTH DISEASE.

II.—MINUTES OF EVIDENCE, APPENDICES, AND INDEX.

Presented to Parliament by Command of His Majesty.



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MINUTES OF EVIDENCE

TAKEN BEFORE THE

DEPARTMENTAL COMMITTEE

Appointed to inquire into the circumstances of the recent outbreaks of Foot-and-Mouth Disease, and to consider whether any further measures can be adopted to prevent their recurrence.

Thursday, 25th January 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (*Chairman*), presiding.

Sir CHARLES D. ROSE, Bart., M.P.
Sir HARRY VERNEY, Bart., M.P.
Sir J. BOWEN BOWEN-JONES, Bart.
Mr. CHARLES BATHURST, M.P.
Mr. WILLIAM FIELD, M.P.
Mr. JOHN HINDS, M.P.

Mr. GEORGE R. LANE-FOX, M.P.
Mr. RICHARDSON CARR.
Major E. MARTEN DUNNE.
Mr. E. E. MORRISON.
Mr. E. M. NUNNELEY.
Mr. W. H. F. LANDON (*Secretary*).

Mr. A. W. ANSTRUTHER, C.B., Assistant Secretary, Board of Agriculture and Fisheries (in charge of the Animals Division), called in and examined.

1. (*Chairman.*) You are Assistant Secretary to the Board of Agriculture?—I am one of the Assistant Secretaries to the Board of Agriculture.

2. And you are really Manager of the Animals Department?—I have been in charge of the Animals Division since 1902, sir.

3. And, as a matter of fact, since that time you have had really all these different outbreaks under your special cognisance, have you not?—Yes.

4. I see by the précis which you have sent round to the members of the Committee that you propose to give a summary of the outbreaks of foot-and-mouth disease from 1839 downwards, and to give us an account of the different Acts, &c., which have been passed. When was this disease first introduced into Great Britain?—The foot-and-mouth disease was first introduced into Great Britain in the year 1839, and a summary of the outbreaks that occurred between 1839 and 1883 will be found in the Report of Professor Brown to the Privy Council, of which the members of the Committee have copies; the Report of the Veterinary Department of the Privy Council of 1883. It appears from that Report that the first outbreak, which continued from 1839 to 1841, occurred in Smithfield Market, in London, and spread from there to various centres in England, and also to Scotland and to Ireland. During 1840 and 1841 the ravages of the disease continued, and Professor Brown states that it should be stated as a fact, which is capable of proof, that the affection was extremely virulent in character, especially amongst sheep and swine. After a period of prevalence of something like two years and a half, the disease seems to have declined, and in 1842 it is stated that very little was heard of the affection for the next two years.

5. Was there any knowledge at that time, do you know, of how it came into the country first of all?—No, but it is stated as a curious fact that it appeared in the country at a time when the landing of animals in Great Britain was entirely prohibited.

6. Entirely prohibited?—Yes. You will find that stated in the Report here, so that it must have been brought in by some form of mediate contagion.

7. (*Major Dunne.*) May I ask what page you are quoting from?—From the Report for 1883.

8. (*Chairman.*) It is in Professor Brown's Report for 1883, page 6, is it not?—Yes, it begins on page 6, but that statement is a little further on in the Report.

9. That is all you have to say on that?—Shall I go on with the outbreaks?

10. Yes. 1839 to 1883?—I have dealt with the period from 1839 to 1841.

11. Yes?—Another outbreak commenced in 1845, and continued till 1847. The next outbreak commenced in 1849 and continued till 1852, and it is stated that in the latter part of 1849 it rapidly extended all over the kingdom. Scotland suffered severely in this outbreak, which appears to have had rather a longer duration than the two previous outbreaks. The disease was certainly prevalent in 1852. The fourth outbreak commenced in 1861, and continued till 1863. During that outbreak the disease appeared in the show-yard of the Royal Agricultural Society at Battersea in 1862, some Breton cattle having been amongst the first attacked. As might be expected, the return of the animals from the show-yard to their homes in different parts of the country led to an extension of the disease. The fifth outbreak occurred in 1865 and continued till 1866. At that time it appears that cattle plague was also present in this country, and

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Mr. A. W. ANSTRUTHER, C.B.

[Continued.]

that outbreak was to some extent checked by the repressive measures adopted for the extirpation of cattle plague. The sixth outbreak occurred in 1869, and continued till 1872. The outbreak was a prolonged and severe one. In 1871 the disease was very prevalent in Ireland, and in Great Britain in the same year there were 52,000 outbreaks reported by inspectors of local authorities, though it is probable that the actual outbreaks were double the number of those that were reported. The seventh outbreak occurred in 1874, and continued until 1875. The disease continued, it is stated, to maintain a high rate of prevalence in 1874 and part of 1875. In the autumn of this year the decline began, and continued during nearly the whole of the following year. The eighth outbreak occurred in December 1876, and continued till 1878. At that time it also appears that the cattle plague was present in this country, and that fact was stated to have established a panic which in itself had the effect of restricting the operations of cattle dealers, and, in addition to this moral influence, the appearance of the dreadful disorder led to the immediate adoption of special measures for its extirpation. This outbreak of foot-and-mouth disease extended over part of England, Wales, and Scotland. The ninth outbreak occurred in 1879. It is stated that then, for the first time in the history of this country, the disease was met by severely restrictive measures under the Contagious Diseases (Animals) Act of 1878. The action then taken appears to have had the effect of stopping the disease before it obtained any grasp of the stock of the country. The tenth outbreak occurred in 1880, and was detected in a dairy in London, and immediately afterwards reports of the existence of the disease were received from Bedfordshire, Kent, Surrey, Essex, Norfolk, Lincolnshire, Buckinghamshire, Leicestershire, and Nottinghamshire, and by the end of the year it was extensively spread in England. That concludes the outbreaks between 1839 and 1880, the latter outbreak having lasted till 1883.

12. There were ten outbreaks in fact between 1839 and 1883?—Ten series of outbreaks.

13. Was it cattle plague, pleuro, and foot-and-mouth disease, or was it three different; which disease was it principally?—This relates to foot-and-mouth disease.

14. What you are giving to the Committee has nothing to do with cattle plague or pleuro?—No.

15. It is purely foot-and-mouth. Well then, from 1880 to 1886 how many outbreaks were there?—In the outbreak of 1880, which lasted till 1883, there were no fewer than 26,996 outbreaks of the disease reported. The largest number in any one year was in 1883, when 18,732 outbreaks were reported. Then in 1884 the disease declined very considerably, the number of outbreaks being 949. In 1885 it was reduced to 30 outbreaks, and in 1886 there was one outbreak, making for the whole of that period of three years 980 outbreaks. That completes the history of the disease up to 1886 so far as outbreaks are concerned.

16. Well now, with all these outbreaks in all these number of years what legislative action was taken between 1839 and 1878?—No severe restrictive measures were taken until after the Contagious Diseases (Animals) Acts of 1878 had been passed. Lord Carlingford, in introducing the Act of 1884 into the House of Lords, mentioned in his speech that that was the first occasion upon which the foot-and-mouth disease was dealt with specially by legislation, although it was scheduled as a disease in the Act of 1869, which proceeded on the assumption that all foreign animals should be admitted into this country freely unless their landing was specifically prohibited.

17. That was the Act of 1884 introduced by Lord Carlingford?—Lord Carlingford introduced the Act of 1884 in the House of Lords in the speech he made on the 14th February 1884.

18. I thought Lord Carlingford's Bill for the amendment of the Contagious Diseases Acts was 1878?—No, sir, 1884. The Act of 1878 was amended in 1884 for the purpose of dealing more effectively with foot-and-mouth disease.

19. Quite so. Then the Contagious Diseases (Animals) Act of 1878 is the basis, I suppose, of the

present Animals Acts, now at this time, is it not?—Yes, sir. That is the basis. The Acts were consolidated in the Diseases of Animals Act of 1894. That is the Act we work under now. It was merely the consolidation of the Act of 1878 and the Act of 1884, which, as I have said, dealt specially with foot-and-mouth disease, and now appears in Section 25 of the Act. The Act of 1878 proceeded on a principle different from that of the Act of 1869, and aimed at stamping out disease by two methods, viz., by restrictions at home and by the slaughter of imported animals; the principle being that all foreign animals should be slaughtered at the port of landing, if allowed to land at all, unless their landing otherwise than for slaughter was specifically allowed. That is brought out clearly in Lord Carlingford's speech, in which he quotes Mr. Henry Chaplin, a high authority on these matters, as describing the Bill of 1878 as a Bill for the purpose of stamping out foot-and-mouth disease by two methods of restrictions at home and the slaughter of animals at the port of landing.

20. Well then, the Act of 1878 was amended by the Act of 1884, was it not?—The Act of 1878 was amended by the Act of 1884, which may be perhaps taken practically as the starting-point for this particular inquiry.

21. What were the reasons for the introduction of the Act of 1884?—Well, they can be gleaned to a great extent from that speech of Lord Carlingford to which I have alluded. He explained that the Bill that he was then introducing, and which became ultimately the Act of 1884, was, with very slight exceptions, a Foot-and-Mouth Disease Bill. To put it shortly, he said, the Bill is intended to increase the responsibilities of the Agriculture Department of the Privy Council, for the purpose of protecting the country against the importation of foot-and-mouth disease from abroad. It may be interesting for the Committee to note that he makes a reference in that speech to the question of the slaughter of animals in connection with foot-and-mouth disease. The quotation is: "I may say, in passing, that I am not at all satisfied that the system of slaughter at home, might not, in certain circumstances, be applied even to foot-and-mouth disease, supposing that the happy day had arrived when this country was again quite free, or nearly free, from the disease, and when it was necessary to prevent its revival." Well now, of course, we may say that that happy day has arrived. Speaking generally, the system of slaughter is adopted in the first instance in the case of outbreaks that occur now.

22. I suppose in those days the Privy Council were urged to take some course like that, were they not?—It is quite clear from the reports of the Privy Council that they were urged to take a course of that description. They mention that memorials were presented by agriculturists to the Privy Council requesting them to take further steps towards the extirpation of the disease.

23. Does that refer only to the year 1881?—No; it refers both to the Report of 1881 and that of 1882. The Privy Council had urged upon them the desirability of prohibiting the landing of animals brought from countries in which foot-and-mouth disease existed. The Privy Council, however, were advised that it was more than doubtful that such a course would be in accordance with the terms of the Act of 1878, which proceeds on the general assumption that foreign animals may introduce disease, and, therefore, must be slaughtered or kept in quarantine at the place of landing. Exemption from slaughter or quarantine was permitted by the Order in Council in the case of very few countries in which the laws relating to the cattle trade and the sanitary conditions of the animals therein were such as to afford reasonable security against the importation therefrom of diseased animals. Total prohibition, however, was reserved for those countries in which cattle plague existed and from which it was likely to be introduced, but it is stated that it is quite certain that the Legislature did not contemplate that prohibition should be the rule, as it would be if it were applied to all countries in which contagious diseases existed amongst animals. In those circumstances the Lords of the Council were not able to entertain the

25 January 1912.]

Mr. A. W. ANSTETHER, C.B.

[Continued.]

applications of the memorialists. I find that in 1882 there was very considerable reference made to similar memorials made to the Privy Council. There were three main propositions made to them. (1) It was proposed to prohibit the landing of animals from countries where foot-and-mouth disease exists; (2) Prohibition was advocated in respect of countries which were not free from disease, including all the diseases within the terms of the Act of 1878; and (3) there was even a more sweeping prohibition to exclude animals from all countries permanently, and to substitute a dead-meat trade for a live-meat trade. In discussing the first of these propositions, which is the one which more immediately affects the Inquiry in this Committee, it is stated in the Report for 1882 that this proposition is within the powers of the Privy Council under the provisions of Section 35 of the Act of 1878, in fact, the power had already been exercised in regard to specified ports of France, Spain, and Portugal, and could be further extended from time to time in respect of any specified foreign country from which animals affected with foot-and-mouth disease are shipped to this country. But the prohibition could hardly be continued if the exporting country became free from disease. That amounts to this, that the Privy Council were advised that in connection with foot-and-mouth disease they could not impose any permanent prohibition against a country, but they could temporarily prohibit while the disease was known to exist in that country, and it was that state of things which led up to the introduction of the Act of 1884.

24. That was the first Act, was it not?—Yes, the Act of 1884.

25. The first against foot-and-mouth disease, was it not?—Lord Carlingford, I say, describes that as an Act dealing specifically with foot-and-mouth disease.

26. The Act of 1884 was really the outcome of these discussions, of these memorials, too?—Yes, sir, but perhaps I may mention that in March 1883 the Privy Council did prohibit animals coming from France, and they did in fact continue that prohibition by extension orders until the Act of 1884 actually came into force, but it was quite clear they were advised that if the Act was not passed they could not continue to prohibit against France on suspicion, so to speak.

27. Where these cargoes of animals supposed to be the means of introducing the disease into this country?—Apparently not as a rule; on the contrary it is pointed out in the Report of 1880 that from 1st January to 20th September in that year 14 cargoes were landed in which there were 52 cattle and 70 sheep affected with foot-and-mouth disease. No evil results followed the landing of these cargoes, but from the 15th cargo, that brought from France in the "Swallow," the infection in some way escaped and originated in another outbreak in this country. You will find on page 19 of the Report of 1883 which the Committee have before them a rather interesting table showing the dates of the landing of the cargoes of animals in which foot-and-mouth disease was detected, the countries from which the animals came, and the ports from which they were landed, from which it will be seen that during the year 1883, this occurred on no fewer than 90 occasions, and that the vessels came from six different countries, Belgium, France, Germany, Netherlands, Portugal, and the United States. In spite of this, however, it was, at any rate, maintained in these Reports that the landing of these cargoes was not necessarily a means of the introduction of the disease, although occasionally, as has been stated, the disease might escape from these cargoes after they were landed.

28. Does the law now remain the same as it did in that year?—No, sir. The law remained the same in effect until the year 1896, when an Act was passed requiring that all foreign animals, the landing of which was not prohibited, brought to this country, should be slaughtered at the port of landing, that is to say, since 1896 no animals are allowed to be introduced into this country except under exceptional circumstances, and I may perhaps mention that breeding purposes are not considered to be an exceptional circumstance, the word "breeding" having been struck out by Parliament

in the course of the debates on the Act of 1884, so that animals cannot now be landed except practically, you may say, for zoological purposes, animals for Zoological Gardens which may happen to be ruminants which come strictly within the provisions of the Act—deer and animals of that kind.

29. Then, what administrative action was taken first of all by the Privy Council and then afterwards by the Board as regards that Act?—As I have mentioned certain tentative action had been taken even under the Act of 1878 as regards foot-and-mouth disease, and certain prohibitions were already enforced under the Animals Order of 1879, aimed not against foot-and-mouth disease, but against cattle plague and pleuro-pneumonia. Under the Foreign Animals Order of 1884 France was added to the list of prohibited countries, and this seems to have been the only definite action taken on the passing of the Act of 1884. Between 1884 and 1889 certain variations were made in the list of prohibited countries, but I hardly think they are sufficiently important for me to trouble the Committee with the details.

30. Well then, in the autumn of 1889 the Board of Agriculture was formed, was it not?—Yes. The Board of Agriculture was formed by the Board of Agriculture Act of 1889, which took effect on the appointment of Mr. Chaplin as President. No substantial changes were, however, made in the prohibitions until the year 1892.

31. But in that year did not the disease again reappear?—That was the year in which the disease again reappeared. The outbreak of the Eighties having worn itself out in 1886, the country had been completely free of foot-and-mouth disease from 1886 to the 4th February 1892, when it was re-introduced, it is believed, by animals brought from Denmark.

32. Then that led, I suppose, to further prohibitions?—That fact led to the prohibition of the landing of animals from Denmark on the 4th February 1892; the Netherlands was prohibited on the 12th of the same month. Norway, Sweden, Spain and Portugal and Iceland were prohibited on the 1st April of the same year, Iceland, however, being declared free on the 11th May of that year. Morocco was also prohibited on the 5th June 1892. Later on Natal, Zululand, and Portuguese East Africa were added to the list of prohibited countries, and on the 21st August 1893 the Foreign Animals Order of that year came into operation, the position then being that the prohibited countries were Austria-Hungary, Belgium, Denmark, excepting Iceland, France, Germany, Gibraltar, Greece, Italy, Malta, Montenegro, Morocco, Natal, the Netherlands, Norway, the Ottoman Dominions, Portugal, Portuguese East Africa, Roumania, Russia, Servia, Spain, Sweden and Zululand. On the 3rd October 1893 Norway, except the province of Finmark, was declared free from the disease.

33. Well, then, there was an Act of 1894, was there not; a consolidating Act?—Yes, in 1894 the existing Diseases of Animals Acts were consolidated under the Diseases of Animals Act, as it is now called, of 1894. That Act reproduced the Act of 1884 in Section 25. The effect of Section 25 is to make it compulsory on the Board to prohibit the landing of animals from any country or any specified port thereof whenever they are not satisfied, having regard to the sanitary condition of the animals in any foreign country or any specified port thereof, or to the laws made by such country and the administration of such laws, that the circumstances are such as to afford reasonable security against the importation therefrom of animals affected with foot-and-mouth disease. After the passing of the Act of 1894, the Foreign Animals Order of 1895 was made, and under that Order the province of Finmark was added to the prohibited countries. Norway was excluded, and in May 1906 Brazil was added to the list of prohibited countries.

34. Well, then we come to the Act of 1896?—Yes, and with the passing of that Act the present position of the law, so far as regards the landing of animals in this country is concerned, was brought into existence. As I have already explained, the effect of that Act was to require all animals brought to this country to be

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slaughtered at the port of landing, except under the exceptions that I have mentioned. This Act led to the making of the Foreign Animals Order, 1896.

35. Well, then, under the Act of 1896 the landing of animals otherwise than for slaughter, except for certain exceptional purposes, was forbidden, and the power and duty of absolute prohibition still remained to be exercised by the Board; is not that so?—Yes, certainly, sir. Animals under that Act may be landed for slaughter unless the landing is prohibited. Section 25 of the Act of 1894, which I have just quoted, was in no way affected, and it remained for the Board to prohibit the landing of animals, even for slaughter, from countries from which foot-and-mouth diseased animals may be brought, and that power has been put into force on several occasions.

36. How often?—On the 31st December 1897 Norway was prohibited; on the 30th April 1901 Argentina and Uruguay were added to the list of prohibited countries, and in 1901 Chili. Then, owing to an outbreak of foot-and-mouth disease in the Channel Islands, the importation of animals from those islands was prohibited on the 27th April 1902, Jersey being released on the 19th June 1902, and Alderney on the 8th August 1902. Then, later, owing to an outbreak of foot-and-mouth disease in the United States of America, the landing of animals brought from certain States of the Union was prohibited on the 5th December 1902. On the 3rd February 1903 an Order came into operation allowing the landing for slaughter of animals from Argentina and Uruguay, which I have mentioned as having been prohibited in 1900. On the 9th February 1903 Mexico was prohibited. Then, owing to foot-and-mouth disease again appearing in Argentina, that country and Uruguay were again prohibited on the 12th May 1903; that is, only a few months you see after the restrictions had been taken off. On the 1st August 1903 the Foreign Animals' Order of that year came into operation, and the following countries were included in the list of prohibited countries scheduled under the Order of 1896, Argentina, Brazil, Bolivia, Cape Colony, Chili, Columbia, Ecuador, Guiana (British, French, and Dutch), Paraguay, Peru, Morocco, and six States of the United States of America and Venezuela. The States of America were, however, released from the list of prohibited countries in September 1903. There was no alteration in the position thus created till November 1908, when owing to foot-and-mouth disease again appearing in America, certain States were scheduled as prohibited countries, and the restrictions were maintained until March and April of the following year, when they were withdrawn.

37. What Order is now in force; what Foreign Animals Order is now in force?—The Foreign Animals Order now in force is the Order of 1910, of which I have asked the Secretary of the Committee to supply members of the Committee with copies.

38. Now in force at this present moment?—That Order is now in force at the present moment; it came into operation on the 1st January last, 1911.

39. These restrictions all relate to the landing of animals, do they not?—These restrictions all relate to the landing of animals entirely, sir. The list of prohibited countries in that Order is the same as in the Order of 1903 which I have quoted, except that no portion of the United States of America is now included, and certain of the Islands in the Atlantic were excluded to prevent the provisions of Article 4 (1) applying to animals belonging to a non-scheduled country in a vessel calling at ports in these islands. The Canary Islands and the Cape de Verde Islands are technically part of Spain and Portugal, but obviously for disease purposes need not be regarded as parts of those countries, and at these Islands vessels coming from Argentina always have to call; and, in the event of the Board being able to withdraw the restrictions from Argentina, it was thought undesirable that they should be directly re-imposed by including those Islands in the list of prohibited countries. I should like also, if I may, to mention that this Order contained another new feature. If the Committee will look at Article 2 of the Order they will see that it prohibits the bringing in of foreign animals into a port. This is the first time that

that provision was ever inserted in an Order. Up to that time the Order had related merely to animals which were landed, and although the Board always resisted the bringing of cargoes of animals *en route* from other countries into our ports, no specific provision had been made regarding them, and it was not found possible under the Order in its old form to control the bringing in of such animals into the ports as ship's stores. It was found that a very considerable number of animals in the total, although the number in each vessel was small, were carried as ships' stores and brought into our ports, and perhaps remained here for weeks, having come from prohibited countries, and it was thought that this was a practice which was very desirable to bring to an end. The Order was accordingly framed in such a manner as to make it illegal to bring into the port anything which had been carried from a prohibited country.

40. Then, have the Board ever considered any further precaution that might be necessary?—Yes. I have dealt entirely so far with the landing of animals; but the Board have frequently considered whether some such precaution should not be taken as regards the landing of such things as skins, and hides, and sheep's heads; and, although it was not till 1908 that the Board made any use of their powers to regulate the landing of anything but animals as a safeguard against the introduction of foot-and-mouth disease, they had frequently taken these matters into consideration. Perhaps I may say that, in deciding a matter of this kind, it is necessary to consider, not only the articles which might be contaminated before they are introduced into the country, but the chance that such contaminated articles would be brought into contact with susceptible animals in this country. The articles that may be considered *prima facie* to be dangerous are hay and straw, milk and similar products, hides, heads and feet, carcasses, including calves in their skins, and any of these might be possibly a vehicle of contagion. As regards the danger attributed from a professional point of view to any of these articles, the Committee will have the advantage of hearing the views of Mr. Stockman, who is to give evidence after me; but I think it is clear that one must consider not only whether the article itself is dangerous, but whether it is likely to come into contact with animals in this country. For instance, hay and straw obviously may come into contact with susceptible animals after importation. Milk and similar products are not likely themselves to come into direct contact with animals, but there is a certain risk existing from the fact that the waste products are thrown into the pig-pail, and may be carried directly to pigs, and be consumed by pigs, so that if the milk itself was infected, or vegetables, or other such things as are brought into this country, and go into the pigs' pail, there is a certain risk, not a very great one, perhaps, that they might carry the disease in that way. Again, hides, heads, and feet are not the least likely to be brought into direct contact with animals after they arrive here. They go as a general rule to factories, cleaners, and so on, and they are dealt with at once; and carcasses, in the same way, go to a butcher's premises, and even, in the case of calves in their skins, when they have arrived in this country they are, generally speaking, taken to places where they are not likely to come into direct contact with animals on a farm.

41. Here there are no restrictions on these things that you have mentioned?—There were no restrictions up to the year 1908.

42. That is the Edinburgh outbreak you are alluding to, I suppose?—I refer there to the Edinburgh outbreak. There had been no direct evidence at that time that foot-and-mouth disease had been conveyed by any of these particular articles; at any rate, the evidence was not sufficient to warrant their exclusion, but in the Edinburgh outbreak the evidence was clear that the infection had been brought in by hay imported from Holland, and used as fodder for dairy cows. The hay had been brought directly into the dairyman's premises, had been retained until it was used for the cows. The Committee will see if they refer to the account of the outbreak which is in the report for 1908, that within, I think it was some forty-eight hours, the great

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majority of the cows in that shed were affected with the disease, and the inference was irresistible that the disease had been brought in in that way.

43. It came from Holland, that hay, did it not?—The hay came from Holland. But I am bound to state that none of the inquiries made showed that it came from an infected farm in Holland; in fact, the Dutch Government assured us that it had come from a district in which there was no disease whatever; but still the evidence that it brought in the disease was very clear. The disease existed to a considerable extent in Holland at that time, and it is always possible, of course, that the hay got contaminated in transit.

44. Is all foreign hay and straw excluded?—No, the Edinburgh outbreak led to the Foreign Hay and Straw Order, of which the Committee also have copies. That Order prohibits the landing of hay and straw in this country with certain exceptions. These exceptions are: (a) Hay or straw which at the time of importation is being used for packing merchandise; (b) manufactured straw not intended for use as fodder or litter for animals; (c) hay or straw which is landed at a foreign animals' wharf for the purpose of being there destroyed or otherwise disposed of in accordance with any instructions given by the Board of Agriculture and Fisheries; or (d) hay or straw which is authorised to be landed for use otherwise than as fodder or litter for animals by a licence granted by an Inspector of the Board of Agriculture and Fisheries, which licence shall contain such conditions as in the opinion of the Board are necessary to prevent the introduction of disease by the hay or straw; or (e), which was a temporary provision, hay or straw placed on board a vessel before the commencement of this Order for consignment to Great Britain.

45. It naturally excludes from certain countries straw?—The hay and straw were excluded from the list of scheduled countries in the Order, which are the Argentine Republic, Austria-Hungary, including Bosnia and Herzegovina, Brazil, Belgium, France, Germany, Gibraltar, Greece, Italy, Malta, Montenegro, Morocco, the Netherlands, the Ottoman Dominions, Portugal, Roumania, Russia, Servia, Spain, and Uruguay. Later an Order was made to make it clear that France included Algeria and Tunis, which became a question of doubt under the Order as it was first framed. Denmark, excluding Iceland, was added by an Order dated the 5 December 1910, and Sweden was added by an Order dated the 17th October 1911.

46. There are certain countries that are excluded from this Order, are there not?—Yes, it was only made to apply to countries in which the Board had reason to believe the foot-and-mouth disease existed, and there were certain European countries at that time, when the Order was first made, viz., Norway, Sweden and Denmark—Norway is still free, and Denmark and Sweden, which were at that time free, have since been added because disease has appeared in those countries. But as the schedule is now framed I think you will find that it extends to practically the whole of Europe except Norway, and to practically the whole of the rest of the world except the United States and Canada.

47. Then, is it not your opinion that further inquiry is necessary in regard to the articles which you have been mentioning?—I think that it would be very useful if further inquiry can be made into this question, and if the Committee can study it, particularly from the point of view of the danger of the introduction of the disease by these means, and also consider the practicability of taking any precautions. I think it must be frankly recognised that no precautions that the Board can take would be absolutely protective. There must be always a risk run. For instance, the risk of the introduction of the disease by means of people who have been amongst cattle abroad, and also of the introduction in a variety of ways which can never be guarded against. Birds obviously might possibly be the means of introducing the disease flying across a narrow channel and alighting in a field where stock was kept. I noticed that one of the last outbreaks in Denmark was attributed to crows coming across from Germany. It becomes, then, a question of

what further insurance you can take out, so to speak, and what premium you are prepared to pay. It is quite clear that one must consider very carefully what the inconvenience and loss upon the trades concerned would be involved in making any further prohibition. So far as the Board's inquiries have gone up to now, I am bound to say that the Board have come to the conclusion that the inconvenience to the trade quite outweighed the danger of the risk, but it is just possible a further close inquiry might show that there are certain substances which might be excluded without very great inconvenience, and thereby the security might in some degree at any rate be increased.

48. Well then, that concludes that part of the evidence. You have given us all the safeguards which are in force up to the present time, is not that so?—Yes, sir, that is so. The Committee will be able to judge of the efficacy of these safeguards by the statistical table that I propose to hand in showing the outbreaks of the disease in this country since our records have been available. I hand that copy to you. No doubt you will wish to print it in the Report. (*Table handed in.*)

49. From 1870 this is?—The statistical table commences from 1870, but the earlier figures are, I think, of very doubtful value, as shown from that quotation which I made from Professor Brown's Report just now in which it is said that the outbreaks were probably double the number of those actually reported. The real fact being that the disease became so very prevalent that people took very little notice of it, and the local authorities did not combat it with any efficiency. But I think, from 1878 onwards, the figures may be taken as very much more reliable, and, at any rate, since the Board of Agriculture have had the matter in hand, I am certain that the figures are reliable, that is to say, from 1890 onwards. It will be observed that the first outbreak dealt with by the Board was that of 1892.

50. Was that the first outbreak dealt with by the Board of Agriculture?—That was the first outbreak dealt with by the Board of Agriculture; the first outbreak of the disease after the Board was created.

51. How was that introduced into this country, do you know?—The Committee have a copy of the Report of 1892 before them, amongst other documents. It is believed that that outbreak was introduced by animals from Denmark. At that time animals from Denmark were allowed to be landed, and the animals in question were taken to the Islington Cattle Market—I speak now from personal recollection as well as from the official records—and exposed in the market on the Monday. But some of the animals were not sold, and they were put aside in the lairs adjoining the market, with the view of being re-exposed on the Thursday, and between the Monday and the Thursday they were found to be affected with foot-and-mouth disease.

52. Did the disease then spread much?—Yes, the disease then spread to no fewer than 15 counties, 11 in England and 4 in Scotland, and there were 95 outbreaks of the disease altogether. Animals from the market held on the 1st February were found affected in Kent and Sussex, and on the 27th February an outbreak occurred in Edinburgh. It was then ascertained that the disease had already spread from that centre to Glasgow and other districts. During the early part of March the disease spread to Essex, Middlesex, Lancashire, Yorkshire, Westmorland, Renfrewshire, Cheshire, and Perthshire, 13 counties being infected up to that time. Throughout these outbreaks the slaughter of the infected animals, together with those herded with them, was resorted to in instances where the surrounding circumstances were such as to make it probable that the disease would otherwise escape. Towards the latter part of March steady progress had been made in checking the disease, and in April there seemed to be good reason to hope that the Board would be successful in preventing the general spread of the scourge. It was not completely stamped out, however, as in Kent the situation remained for some time exceedingly serious. Owing to the energetic steps taken, the disease was effectually stamped out in Kent by the middle of June, there being no case of the disease in the country at that time. In August, however, the disease again made itself apparent

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in a very mysterious manner in two premises at Leith, near Edinburgh, and also in a farm in Derbyshire. On the 31st December a further outbreak occurred in a dairyman's premises near the London Cattle Market. These cases were all dealt with promptly, and the disease was apparently then extinguished.

53. Then, what about next year; there were other outbreaks, were there not?—There were two outbreaks in 1893, one in London and the other in Sussex, and in 1894 there were three outbreaks; there was one in Essex, one in Cambridge, and one in Kent.

54. You say there were three in 1894?—There were three outbreaks in 1894.

55. In Essex, Cambridge, and Kent. Now, was there any knowledge at that time how those outbreaks occurred, because that is two years afterwards?—No, in that series of cases so far as I am aware, no definite information could be obtained of the origin of the disease. And that is true also of the two outbreaks in 1893. No inquiries that were made could establish any reliable history of the origin of the disease.

56. Then, from 1894 to 1900, there were no outbreaks, were there?—No, there was a period of complete freedom from disease.

57. You had stamped it out?—To all appearances; in fact one may say with certainty that the disease was completely stamped out, and it did not reappear until the 29th January 1900, which was the commencement of a severe outbreak that continued in the following year, and was eventually brought to an end in April 1901. The Committee have before them the Reports for 1900 and 1901, from which they will be able to see, if they so desire, the full history of these outbreaks. In 1900 the disease was first reported on premises at Fritton, near Yarmouth in Norfolk, on the 29th January. On the 1st February another case was reported at Freethorpe, near Norwich, and on the 5th of the month one at Ormesby, St. Michael's, near Yarmouth. This last case was connected with one of the former ones. On the 8th February another case was reported at Freethorpe, no doubt connected with the former one, and another on the 10th February at Great Ormesby, near Yarmouth. On the 12th February the disease appeared at Shefford, in Bedfordshire. On the 20th a case occurred at Reedham in Norfolk, which was connected with the previous outbreaks in that locality.

58. Norfolk seems rather a bad place I am afraid?—It was bad there that year. On the 23rd April a case was discovered at Wakehampton, in Norfolk, also connected with the other Norfolk cases, and on the 12th May the disease appeared at Codicote, in Hertfordshire. There was no further outbreak until the 2nd August, when disease was discovered at Marfleet in Yorkshire, and on the 13th of that month, at Rhyl in Flintshire, where another outbreak occurred on the 24th August, and a further outbreak on the 30th. On the 12th September the disease was reported at Melksham, in Wiltshire, and two other outbreaks occurred in the county on the 17th and on the 21st.

59. I was going to ask you, was the source of this outbreak ever found out?—No, sir, there was no satisfactory clue to the introduction of the disease.

60. In this big outbreak?—No. On the 5th October the disease appeared at Lichfield, in Staffordshire, and on the 12th December at Harlow in Essex, followed by outbreaks at Dunmow in Essex on the 13th and at Stansted on the 15th, and at Ongar on the 18th. These Essex outbreaks were all connected one with the other. That makes a total of the outbreaks for the year of 21 in nine different counties. No suggestion could be offered as to the source of the infection in either of the original outbreaks in Suffolk, Flintshire, Wiltshire, and Essex, nor as to the outbreaks in Bedfordshire and Hertfordshire, but in respect of the outbreak in Yorkshire there was a considerable suspicion attached to trimmings from sheep's heads which had been imported from Holland. The suspicion was rather a strong one, but it was never sufficiently substantiated for the Board to be able to take up the positive view that that was the undoubted source of the disease.

61. Well then, we come to 1901?—1901.

62. What outbreaks were there in that year?—That was really a continuation of the same big outbreak.

63. The same outbreak?—The disease appeared on the 27th January 1901 at Ipswich in Suffolk; two further cases occurring at practically the same time in the locality which was connected with the original outbreak. Further outbreaks occurred in Suffolk on the 1st, 18th, and 24th of February, and on the 7th March. Again, in spite of full investigation no evidence as to the origin of the disease could be traced. On the 31st January the disease had also appeared in the County of Kent amongst a flock of sheep. No cause for this particular outbreak could be traced. Another outbreak occurred in Kent in the immediate vicinity of the one above mentioned, and finally two outbreaks occurred in the County of Essex, one on the 8th April and the other on the 12th. No origin could be established for the first of these Essex outbreaks, but there is no doubt that the second was due to indirect contact in Romford market with animals concerned in the former case. That concludes a short account of the outbreaks of 1901.

64. Then, there was an outbreak in 1902 which I suppose was the same carried on?—The disease appeared on the 27th March 1902, in Kent, within a short distance from the place at which the 1901 outbreak occurred, so that the inference might possibly be that by some means the infection was left behind in that case, which I think is one of the very few cases in which that inference can be set up in any way.

65. Well again, the country was free I think from 1902 to 1908, was it not?—That is so, sir. In 1908 we come to the outbreak in Edinburgh which I have referred to in connection with the Foreign Hay and Straw Order. At that time no case of foot-and-mouth disease had occurred in Scotland for a period of 15 years, which re-enforced the view that the disease must have been brought in from abroad by this hay and straw. There can be no possible suggestion that it could have been contracted in the country. In connection with the outbreak there was a further outbreak on the 23rd February also in the dairies in Edinburgh, but the disease never spread beyond that. Then, in 1910 there were two outbreaks at Ripon in Yorkshire, and that completes the list of outbreaks until we come to last year.

66. 1911?—As regards the Yorkshire outbreaks I may mention that no satisfactory origin of the disease could be discovered. The only article upon which suspicion could be thrown was a cattle cake; that cake was of British origin.

67. Linseed?—I could not say offhand whether linseed or cotton cake. It was made in Hull, and the only possible theory that one could set up was that it became contaminated in transit in Hull, which is one of the ports at which a number of the foreign substances to which reference has been made are landed. For instance, it is one of the ports to which calves in their skins come, and some of these foreign offal and various other substances are also no doubt carried about in the lorries connected with the docks, and it is just possible that the cake may have become contaminated there, but we have got no evidence; that is really only hypothesis.

68. Surmise?—Surmise.

69. Now, we will come to the big outbreak of last year, 1911; they are in five groups I think, Surrey, Middlesex, Essex, Derby, and Somerset?—Yes, sir. I have given, for the use of the members of the Committee, a copy of a memorandum giving shortly the account of these outbreaks. I do not know whether you would like me to go through it in full.

70. I think the Committee would like to hear about these as they are so recent. I think these are the ones they would like to look into more particularly?—The disease was first reported to the Board on the 9th March 1911, on farm premises near Chobham in Surrey. There were on the farm premises and in the adjoining fields 24 cattle, 5 pigs, and 165 sheep, of which 6 cattle and 3 swine were diseased. The slaughter of these animals and of 1 cow and 2 pigs which had

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been in contact was immediately ordered. The infection did not spread from the premises and no further outbreak occurred in the district, and all restrictions were withdrawn on the 15th April. The next outbreak was on the 30th July, when the disease was reported on premises near Hounslow, Middlesex. There were on these premises, which were at the time of the outbreak subject to restrictions imposed under the Swine Fever Order of 1908, 76 fat or fattening pigs, of which 37 showed clinical symptoms of the disease at the time of the Veterinary Inspector's visit.

71. (*Mr. Hinds.*) That is foot-and-mouth disease?—Yes, the owner also had 1 calf on his premises and in his fields 2 cows and 17 heifers, to the latter of which disease subsequently spread. In the immediate neighbourhood there were 3 cows and 2 pigs and as the premises appeared to be fairly well isolated the Board ordered the slaughter of the whole of these animals; that is to say, the Board ordered the slaughter of the whole of the animals on this man's premises and on the adjoining premises too, to try and make a clean sweep of the outbreak.

72. (*Chairman.*) Have the Committee got a copy of this Report which you are reading from?—Yes, sir. Middlesex:—(2) Reported 3rd July 1911, at premises near Hounslow, Middlesex. There were on the premises, which were at the time of the outbreak subject to restrictions imposed under the Swine Fever Order of 1908, 76 fat or fattening pigs, of which 37 showed clinical symptoms of the disease at the time of the veterinary inspector's visit. The owner also had 1 calf on his premises and in his field 2 cows and 17 heifers, to the latter of which disease subsequently spread. In the immediate neighbourhood were 3 cows and 2 pigs, and as the premises appeared to be fairly well isolated the Board ordered the slaughter of the whole of these animals. (3) Reported 6th July 1911, near Hounslow. The premises were within a quarter of a mile of those implicated in (2). One cow was found to be affected, and this animal together with the remaining animals—8 cows and 1 goat—on the same farm were at once slaughtered. (4) Reported 7th July 1911, from premises at Harlington, near Hounslow. This case was discovered during the house-to-house veterinary examinations which were carried out by the Board's veterinary inspectors. One cow was affected, and there were in contact 9 cows and 7 calves. There was reason to believe that infection had been conveyed from outbreak (2) direct by mediate contagion, and the slaughter of all the animals referred to was immediately carried out. Restrictions were finally removed as from the 8th August 1911. Sussex:—(5) Reported 17th July 1911, on premises at Udmore, near Rye, Sussex. There were on the farm premises and the marsh contiguous thereto 6 cows, 9 calves, 26 yearlings, and two-year-olds, and 1,667 sheep and lambs. At the time of the veterinary inspector's visit, the affected animals comprised 3 cows and 5 calves (1 dead) on the farm premises, and 1 cow and 1 calf on the marsh land. The 2 last-mentioned animals were forthwith slaughtered, pending the visit of the Chief Veterinary Officer. Upon receipt of his report, the whole of the animals were ordered to be slaughtered. (6) Reported 18th July 1911, on premises at Udmore. There had been constant communication between these premises and those in (5), the owners being relatives, and in all probability infection was conveyed from those premises. The animals affected were 5 sheep running in a lot of 61, and the total stock on the farm comprised 11 cattle, 317 sheep and lambs, and 4 swine, all of which were slaughtered. (7) Reported 18th July 1911, on premises near Udmore. The disease was found to exist in a lot of 22 fattening sheep running in a marsh. The owner also had 10 cattle and 40 sheep on a marsh adjoining the infected marsh mentioned under (5). These animals were also slaughtered, together with 3 lots of sheep, in all 161, which had been exposed to the risk of infection. No further outbreaks occurred and restrictions were finally removed as from 23rd August 1911. Derby:—(8) Reported 21st August 1911,

premises at West Hallam, Derbyshire. There were 1 bull, 31 cows, 7 calves, 53 sheep and lambs, and 5 pigs on the premises, 5 of the cattle being diseased. The farm was favourably situated, and it was decided to slaughter all the animals thereon, together with 1 cow which had possibly been exposed to infection. The restrictions were withdrawn as from 30th September 1911. Somerset:—(9) Reported 28th September 1911, from premises at Middlezoy, Bridgwater, Somerset. There were on the infected marsh 18 cows, of which 16 were affected. The disease had been present for some days before its existence was recognised, during which period there had been daily movement of the cows between the farm premises and the marsh, along the public road. Twenty stores had also been moved from this marsh to a distant field a few days before the outbreak was reported. Those were brought back and slaughtered, together with the 18 cows above referred to and 14 stores grazing in the adjoining marsh. Subsequently the following animals which had been exposed to the risk of infection were slaughtered: 1 bull, 4 yearlings, 12 calves, and 29 pigs belonging to the owner of the affected animals, and 1 bull, 7 cows, 3 cattle, and 5 cattle, respectively belonging to other owners. (10) Reported 1st October 1911, on premises at Middlezoy. Disease was found in the lot of 8 cattle (1 bull and 7 cows) referred to under (9). The animals had been moved from a field adjoining the infected field in that case to another marsh at some considerable distance. On the confirmation of disease they were again at once moved to the farm premises for isolation pending any decision as to slaughter. In addition to these animals 4 calves and 2 pigs belonging to the same owner were slaughtered. (11) Reported 3rd October 1911, on premises near Middlezoy. The affected animal was found during the veterinary inspection of stock, and was at pasture in a field some 600 yards away from the scene of outbreak (9). The affected animal and two other cows in contact in the same field were at once slaughtered. (12) Reported 4th October 1911, on premises about 1½ mile from those in outbreak (9) but in the same parish. The disease was discovered by one of the Board's inspectors amongst 7 cows, which were immediately killed, together with 10 other cattle belonging to the two owners. (13) Reported 4th October 1911, on premises in Middlezoy parish about ¾ mile east of the infected field in outbreak (9). Disease found in a lot of 6 cattle, which were slaughtered. (14) Reported 4th October 1911, on premises in Middlezoy parish about ½ mile south-east of the infected field mentioned in outbreak (9). The disease was discovered by one of the Board's inspectors, and the animals (14 cattle) were also killed. (15) Reported 4th October 1911, from field immediately adjoining that which contained the diseased animals mentioned in (14); 17 cattle were in the field, four of which were diseased, and all were immediately slaughtered. (16) Reported 6th October 1911, on premises in the parish of Othry. The disease was detected in a steer by an inspector, and this animal, together with seven others in contact, was ordered to be slaughtered. (17) Reported 6th October 1911, from premises in Middlezoy parish. One cow amongst three which were running with three calves was affected, and all the animals were killed. The following lots of animals were also slaughtered in connection with outbreaks (13), (14), (15), (16), and (17), namely: 5 cows, 11 stores, 4 cows, 2 heifers, 6 dairy cows, and 9 bullocks. (18) Reported 9th October 1911, on premises near Middlezoy. The disease appeared amongst a lot of five cows which had possibly been in contact with the cows the movement of which is referred to under (10). The cows were at once slaughtered. (19) Reported 6th December 1911 from premises at Martock, Somerset. Six cattle were then affected, and subsequently the whole of a lot of 17 were affected. There were on the infected premises, in addition, 1 bull, 16 cows, 30 pigs, 20 sheep, and 2 calves, and on premises in an adjoining parish 22 cows. The premises were suitable for

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" stamping-out measures, and all the animals were slaughtered."

73. Well, now, in all these outbreaks was there any sort of idea how they originated in any one of these five different counties? Did the Board ever find out anything?—Well, as regards the Surrey outbreak there was no traceable origin. The Committee will observe that, curiously enough, in this year the outbreaks ran in a complete series; that is to say, that the disease had been entirely got rid of in each of these centres before the next centre appeared. They did not overlap, as has been the case in the past, and in the Surrey outbreak, I say, there was no traceable origin whatever. In the Middlesex outbreaks suspicion fell to some extent on the pig-pail in the manner which I have described before. The pig-pail contained materials, some of which were green vegetables, which were believed to have come from an infected country. The owner of the pigs had been in the habit of buying this what we may call hotel refuse, amongst which was found to be uncooked vegetables that had been thrown out into the pig-pail. But as against that theory I may mention—although Sir Edward Clarke will be able to go into the matter in more detail—that in the immediate neighbourhood there was a much larger pig-keeper who also obtained the same materials from practically the same sources, and he never had a sign of disease at all, so that if it was introduced by the pig-pail it must have been a bit of extremely bad luck for that particular owner.

74. (*Sir Charles Rose.*) You mean he got it from the same place?—He got it from the London hotels.

75. (*Chairman.*) From one of the London hotels?—Yes, collected it, and he was open to the same risk, and he escaped the risk, if, indeed, it was a risk. Then in the Sussex outbreaks—in what I am saying now I am referring to the original outbreak with which the others were probably connected—there was some suspicion attaching to the visit to the markets of the neighbourhood of French sheep dealers. Perhaps it is rather too high to put it as suspicion, but it is a known fact that French sheep dealers had been in the markets in the neighbourhood not long before. There again the inspectors who were on the spot will give you the details, but the only circumstance to which any suspicion can be attached is the fact that these dealers, who came probably directly out of French markets, may have possibly brought the infection on their clothes; but there was no evidence that they had visited this particular farm, so that it can only be considered as a very remote clue. As regards the Derbyshire outbreak, there was absolutely no clue whatever, and the same may be said of the big outbreak in Somerset. The Somersetshire outbreak was a very serious one owing to the rapid spread of the disease through the marshes, but the origin remains a complete mystery as regards the first outbreak. The owner of the cows kept them in a marsh about a quarter of a mile from his farm buildings, and drove them back daily—or probably twice a day—to be milked along a bit of the high road from Bridgwater to Glastonbury. After the cows became infected they traversed this road for three or four days before the owner discovered what was the matter; and that is an easy explanation of the rapid spread of the disease in those marshes to other stock, but it is no explanation in the least of how it was introduced, and there was no clue so far as I have been able to discover.

76. As regards that outbreak, I may say I have had one or two letters from people down there suggesting things, but I think it is more evidence Mr. Stockman will be able to give as regards the marshes, the rhynes being cleaned out and that?—There was a suggestion that disease had been in the neighbourhood some 30 years ago, and that this having been a very dry summer some of the rhynes, as they call them there, between the marshes which had never been dried before, were dug out, and the stuff dug out of the bottom put on the side of the rhyme. This actually occurred in the particular marsh where this first appeared. At the same time one has to set up the theory that the disease had lain in the water in the ditch for 30 years. That is a veterinary's question which Mr. Stockman will be able to discuss.

77. Will you tell the Committee the nature of the inquiries made as to the origin of these outbreaks and the steps you took?—Well, generally speaking, perhaps I had better go into the question generally and not in detail.

78. No, generally?—Inquiry is made in each case as to the recent movements of animals on to the premises or for breeding purposes; the origin of the food recently given to the affected animals; the purchase of foreign produce of any kind, such as corn, artificial foodstuffs, bone, or artificial manure, peat moss, raw milk, &c.; the origin of the bags in which any such produce had arrived; the proximity of factories receiving consignments of foreign skins or hides; any refuse of such factories used as manure; any recent visits of foreign traders or stock dealers or of local residents to places abroad; the arrival of any household requisites of foreign manufacture wrapped in straw or litter, and the possibility of recent purchases of feeding stuffs having been infected by imperfectly cleansed railway trucks. Those are the lines of inquiry which have been suggested to us as time went on by the various occurrences, and the inspectors now always make inquiries into all these points, and, of course, into any other special points that may occur to them in connection with that particular outbreak.

79. Directly an outbreak is reported, Mr. Stockman or one of your inspectors immediately goes down and reports?—Immediately an outbreak is reported our veterinary inspector is sent to make the preliminary inquiry—one of the Board's own veterinary inspectors. Unless he is completely satisfied and is able to diagnose definitely that it is foot-and-mouth disease, Mr. Stockman himself proceeds to the premises to investigate and make a full report to the Board.

80. Then, if the report is confirmed, what takes place?—Well, I may say, that during the preliminary veterinary inquiry all the arrangements are made at the office for proceeding with an Order on the assumption that the outbreak may be confirmed. We do not wait till it is confirmed before we put our machinery in motion. On several occasions we have actually got Orders ready for issue, and no necessity to issue them has arisen, but we think it better not to wait till we get the confirmation of the disease before we go through with the preliminary business. Telegrams are dispatched at once to the police constable who reported the case, the chief constable of the district, the clerk of the local authority concerned, pointing out that the rules contained in Article 4 of the Foot-and-Mouth Disease Order of 1895 as to foot-and-mouth disease infected places, should be carefully observed, that one person only should be permitted to approach the suspected animals, and that such persons should not be permitted to approach any other animals. Telegrams are also dispatched to those general and district inspectors of the Board concerned, warning them to be ready to proceed to the suspected premises in the event of the report being confirmed. Preliminary arrangements are made as to the staff of inspectors that may be required to deal with the outbreak, and preparations, as I have already stated, are made for the issue of the usual Order prohibiting the movement of animals.

81. Are foreign countries informed of the outbreak?—Not on a report, sir. So far I have been alluding only to a report of foot-and-mouth disease. Then the procedure in the event of an outbreak being confirmed is: In the event of the report being confirmed by the veterinary inspector, or if he is at all doubtful as to the diagnosis, by the Chief Veterinary Officer who, as I have already stated, himself, as a rule, at once visits the premises to confirm the inspector's diagnosis, and to advise the Board as to the best method of dealing with any infected animal or animals that have been exposed to the risk of infection, the necessary staff of inspectors are at once instructed to proceed to the scene of the outbreak. The Prohibition Order, which has already been prepared in draft, is at once sealed, signed, and issued. Telegrams informing persons directly concerned with the administration of the Order are dispatched to the following persons or bodies, acquainting them of the issue of the Order, and of the necessity

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of its immediate enforcement: (a) local authorities of the district affected by the Order; (b) chief constables and superintendents of police of such district; (c) railway companies having lines in such district; and (d) the Board's inspectors themselves. An Order is also forthwith made by the Board declaring the premises to be a foot-and-mouth disease infected place under Section 12 (a) of the Diseases of Animals Act, 1894, and also to prevent the withdrawal of the restrictions from the infected place by the local authority without the concurrence of the Board.

82. When the report is confirmed, information is sent to the foreign countries, I suppose?—Yes, sir. Where the case is an initial outbreak, that is to say, when we get foot-and-mouth disease in the country after a considerable period of freedom, we also take this further step of informing every local authority in Great Britain by telegram of the outbreak, and asking them to warn stockowners and others concerned in their district to be on the alert for any suspicious symptoms of illness amongst stock, and to report such symptoms to the police promptly. The Department of Agriculture and Technical Instruction for Ireland are also informed by telegram of any such outbreak, in order that they may be in a position to take any measures which they may consider necessary. In the case of an initial outbreak, and also at various intervals afterwards, a notice is issued by the Board giving particulars as to the case or progress of the operations undertaken to the principal newspapers, High Commissioners for the Colonies, Foreign Embassies, Legations and Consulates, and to various agricultural societies, so that, far from there being any wish or desire or attempt to conceal the fact that a disease has occurred we publish the information promptly and we acquaint foreign countries. I may say that one hopes by that means to get other countries to have complete faith in any statement we make with regard to there being no disease in the country which, of course, is important from the point of view of the question of the exportation of stock.

83. Then, when you modify your regulations, what general principles do you work upon?—The procedure adopted as to the modification of the restrictions imposed by the Prohibition Order is always identical in principle, although, of course, variations are made to suit the particular circumstances attending any outbreak. The successive modifications usually made at intervals varying from three to ten days are on the following lines: (a) The scheduled district is subdivided into three areas or zones, in each of which separate restrictions take effect. In the first or innermost zone, comprising the immediate neighbourhood surrounding the infected premises, all movement remains entirely prohibited. In the second zone, comprising an area of about eight miles radius around the infected premises, movement is allowed by licence for slaughter of animals from outside the scheduled district, or from the third zone. In the third, or outer zone, movement is allowed by licence for slaughter of animals either within the zone or from outside the scheduled district. The movement of animals out of each zone remains prohibited. You see the restrictions—you may take it as a picture—are applied like the rings of a target, there is the bull's-eye, which is the most dangerous, the inner, and then the magpie, as rifle-shooting people would call it, and the outer ring, and we gradually ease off the restrictions from outside inwards so as not to keep the prohibition on longer than is necessary, and at the same time to guard against any possible risk of the disease being somewhere in the district undetected. Of course, it must be borne in mind that when an outbreak occurs people are apt to assume that the outbreak that has been discovered is really the original outbreak. It does not at all follow. It may be that several people have the disease on their farms, and that nowhere it has become sufficiently prominent for the owner to notice it, or it may be that one man has more insight and notices more quickly, so that we throw a wide net of restrictions over a district and keep these restrictions in force in order to help us in discovering any further disease centre. The moment a man can-

not move his stock, or can only move them by licence, and has to apply for a licence, it immediately brings to his mind the question of there being anything the matter. In the recent outbreaks we have been extremely fortunate in every case. I believe we have found the disease at the original centre, but we must not assume that that will always happen. At any moment it might happen that the disease had existed in the district for several days, or even weeks, unknown, especially in remote districts, so that it is a safe principle to throw your net wide and then to gradually ease off your restrictions from the outside inwards. (b) Movement into or within the second zone of animals for slaughter is allowed by licence—that is a further modification—and the movement of animals within the third or outer zone is allowed by licence for any specified purpose, including movements between different parts of the farm for feeding purposes. (c) Then, as a further modification, the movement within the second zone is allowed by licence for any specified purpose, and free movement is allowed within that zone; free movement within the third or outer zone is permitted, but no movement is allowed out. In the third zone markets of fat stock are allowed by special authority of the local authority, who are required to cause a veterinary examination of the animals exposed at the market. Then there is a further modification: (d) The scheduled district is contracted by freeing the outer zone from all restrictions and the subdivision of the remaining area into three smaller zones, in each of which the different restrictions above described take effect. Entire prohibition of movements continues to be maintained in the immediate vicinity of the infected place, but only within about a mile thereof. Then, finally: (e) Restrictions are entirely withdrawn by the Board when they are satisfied that no further risk of the spread of the disease exists. This period varies from about five to ten weeks from the confirmation of the outbreak. I may mention that in certain cases it is necessary to make special orders, applying to the immediate vicinity of the infected place, relating to the movement of persons and dogs, and in one case in Somersetshire, poultry. That is done when there is anything like rights of way through the original farm. I remember that in a big outbreak at Sittingbourne in 1892, where I was for practical purposes the inspector in charge, the disease occurred in a private park across which there were no fewer than three paths—public rights of way—so that there were six directions in which disease could spread. In those days we had not worked up our organisation to what it is now, and we had not any Order of that kind. We made that Order for the first time in that case because the disease went along every one of these six paths. Now when we get a position of that kind we pass an Order at once which enables the police to prevent people making use of the public right of way without disinfecting themselves where they leave the field. I may add, perhaps, that particulars of any Order restricting the movement of animals in connection with any outbreak of foot-and-mouth disease are sent to every local authority in Great Britain, and to the railway companies for their information. That, I think, completes the description of the procedure.

84. Procedure at the scene of the outbreak I suppose we shall get from Sir Edward Clarke and other inspectors, shall we?—I think you would get it perhaps more conveniently from them, because they have been through it now a great number of times in this particular year, and it would be more satisfactory to take their evidence. Of course, the general procedure is, the inspector goes down and takes charge, makes immediately preliminary arrangements for the burial or cremation of any animals that may require to be slaughtered awaiting the instructions of the Board. In any initial outbreak he knows now that slaughter will probably be resorted to, and he generally has his arrangements for slaughter or cremation ready before the order for slaughter comes out. Of course, one wants to guard oneself against the supposition that slaughter is or should always be resorted to in every outbreak, because if one became aware that disease had

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been spread about from a market like it was from Islington it might be hopeless to commence by slaughtering at every centre, especially if there had been a further movement through another market or anything of that kind, and the disease had got so far away from you. It would then be simply throwing money away to attempt to stamp it out by these very expensive methods. One would rely upon isolation, which has been proved to be very effective in other outbreaks too, although more tedious to the owners and more dangerous from the fact that the infected material remains alive for a longer period.

85. Well now, just a few more questions about these articles: You have given a list of some of the most dangerous articles and alluded to inquiries you have made; can you amplify this part of your evidence at all?—Yes, I can certainly do so, sir, as regards the action that the Board has taken. In the days of the Privy Council some inquiries were made as to the articles that were introduced, skins and hides, and such like; but, so far as I can ascertain from examining the Reports, they were principally made in relation to the danger of the introduction of cattle plague. But the inquiries which the Board have made have related, in the first instance, more particularly to foot-and-mouth disease. The question has come up also with regard to the possible risk of the introduction of the infection of anthrax. It is clear that the vehicles of contagion would be more or less similar as regards both these diseases; a large number of the dangerous articles, at any rate, would be the same in both cases.

86. (*Mr. Bathurst, M.P.*) What do you mean by both?—Foot-and-mouth disease and anthrax; that is to say, hides might bring in anthrax, and they might bring in foot-and-mouth disease, so that any inquiry that the Committee may make as regards the dangers from the point of view of foot-and-mouth disease may be very useful to the Board in the long run in considering the question of the introduction of anthrax; and perhaps the Committee in making these inquiries would bear that point in mind, because I think it might be very useful if they could extend their inquiry so as to cover the possibility of anthrax being introduced by any particular material.

87. (*Chairman.*) Then as regards foot-and-mouth disease inquiries?—Well, in 1892 an Order was actually drafted prohibiting the landing in this country of sheep's heads with the wool on, hay and straw, moss-litter and peat-litter from certain scheduled countries, and requiring the disinfection of fresh hides, hoofs and horns from abroad, before being removed from the port of landing. After some consideration the Order was not proceeded with, it being, as I understand, considered that the additional security gained would not compensate for the disturbance of trade in the absence of any direct evidence of the infection having been introduced by these means.

88. (*Mr. Lane-Fox, M.P.*) What date was that?—1892.

89. (*Chairman.*) Then no Order was made?—No Order was made. Then in 1893 an inquiry was made as regards calves brought over from the Continent in their skins, but the President of the day—I may say the President in 1892 was Mr. Chaplin; the President in 1893 was Mr. Herbert Gardner, now Lord Burghclere, and he decided that no case had been made out for action in that direction.

90. Have these subjects arisen again since that time?—Yes. In 1900 a further general inquiry was made, and a Report was made by one of the Board's inspectors who enumerated the following as possible media by which foot-and-mouth disease could be introduced: hay and straw, milk, butter, eggs, moss-litter, hides and horns, offals, carcasses of sheep and calves, carcasses washed ashore, manure, wool, rags, wood-pulp, potatoes, vegetables, seeds, horses, pigeons, poultry, rabbits, and birds such as crows. He reported specially on the trade in sheep's heads and feet both where the heads and feet were attached to the carcasses, and in cases where they were detached and packed in hampers. It was found impossible to ascertain the extent of the latter trade from the Customs owing to the lack of description in the trade returns. It was found that heads

came in, as far as regards Customs returns, either as dead meat or offals, and the feet were included as offals. The heads and feet came chiefly from Holland *via* Harwich, Hull and London. Inquiries from the trade in London showed an import of at least 20,000l. a week. At the same time another inspector inquired specially into the trade in calves in their skins. His Report showed an annual value of about 28,000l., the trade being chiefly in the spring from Holland to ports serving the northern and midland counties and London, the chief ports *via* Hull, Newcastle and Harwich. This trade was again referred to last year by Dr. Stevenson of Newcastle-on-Tyne. He reported that at the present time the carcasses of calves arrived without heads or feet, these being removed in Holland and sent separately to London, so that that shows that that trade is still in existence in some form, but the extent of it we have not gone into in recent years. In March 1901 also a full memorandum was prepared for the information of the then President, Mr. Hanbury, on the information collected at that time with a view to possible action, but it was again decided that action could not be taken without undue interference with trade. That concludes the inquiries that were made specifically in connection with the introduction of foot-and-mouth disease.

91. Then about the anthrax inquiry, what was done?—In 1905 this question again came prominently into notice, and between 1905 and 1910 a good deal of investigation was made into the question of these imports, owing to the increasing number of cases of anthrax.

92. Was any action taken?—No, sir, no definite action in the way of prohibition was taken, but after the inquiry was concluded the Board issued a warning notice to shipowners, more especially with regard to the danger of the infection from feeding-stuffs by their being carried in parts of the vessel which had previously carried hides or other substances which might be infected with anthrax. The Board issued a warning notice, of which a copy can be supplied, drawing the attention of shipowners to this danger, and inviting them to take steps to disinfect the holds of their vessels carefully after they had carried any such substances, and before any substances that could possibly be used as feeding-stuffs for animals were put in their holds. I am afraid, however, that but little notice has been taken of the warning; but it is fair to say that there are a good many practical difficulties both in connection with the stowage of cargo and as regards the satisfactory disinfection of the holds.

93. Then came the inquiries with regard to the Foreign Hay Order?—Then came the inquiry with regard to the Foreign Hay and Straw Order; and, as I mentioned, foreign hay and straw were prohibited with certain exceptions. The attention of the Board was called at one time—I do not know that I have got the actual year here, I think early in last year—to the possible danger of the disease being introduced by the material in which eggs were packed, and further inquiry was made, but it was found that very little risk attached to the packing material, the trade having adopted wood-wool to a very great extent as a substitute for hay and straw, hay and straw being now chiefly used in the Irish trade only. It is also stated that foreign eggs are carefully cleansed, and that the packing is done at depôts, and not on the farm, so that it did not appear from those inquiries that any very great danger was to be apprehended from the material in which eggs were packed. I think that may be said to conclude a short description of the inquiries which have been made in recent years.

94. Well now, there is one general question I would like to ask you. It is rather a wide question, at the same time I think it is one which is interesting. Do you think that the bacillus of this disease has ever really been eradicated out of this country; is it not really always lying dormant, as a great many people think?—That would be more a veterinary question than a question for me.

95. I know; but with your practical knowledge I would like to have your view upon it?—I should say emphatically that it must have been—although it is just conceivable that in a certain number of isolated

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cases it might remain dormant—it is just conceivable—I do not think it is a practical suggestion when one comes to think of the number of farms which must have been infected in the eighties, in which the bacillus might have remained dormant if this theory was at all true; if it had a long life of that kind you would expect the disease to break out time after time in counties where there had been previous outbreaks. I do not think we have got any evidence to show that that is the case, although it does happen that in these outbreaks of last year there were several cases in which it was known that the disease had existed on those premises in past times, and there was a certain amount of suggestion, some of it more or less definite, that some old buildings had been recently pulled down or dealt with. It is just conceivable that there might be one or two isolated cases in which the infection might have remained alive, if the veterinary profession say it could have remained alive, for that length of time.

96. We will ask Mr. Stockman?—Mr. Stockman will say, I believe, that it could not. It was quite a new feature when it was discovered that infection would remain alive three months in hay, in connection with the Edinburgh outbreak. That was quite an outside limit of time, that it had been thought it could remain alive.

97. (Mr. Nunneley.) How long was that?—About three months. The hay was brought over early in November, and it was consumed in the latter days of January.

98. (Chairman.) With this evidence you have given, and knowing as we all do that Europe, the Continent, is teeming with outbreaks of foot-and-mouth disease, I suppose it is your opinion that we are always liable to spasmodic outbreaks in this country?—Undoubtedly; and I think it will be found, although the statistics in the earlier years are not very easily to be got at, that whenever the disease has become specially rampant on the Continent, we have always had it brought in here. Certainly, when one looks at these reports you now have before you, in nearly every case there is mention of the fact that the disease was at that time prevalent on the Continent. When you think of the number of ways in which the disease can be brought in, the extraordinary thing is that we do not get it oftener; and it is an extraordinary bit of good fortune that we never got it in the market of recent years.

99. That being the case, has the Board ever considered the question of approaching foreign countries to take common action? I know there is danger, but at the same time have they ever thought of taking common action with foreign countries to eradicate disease from the Continent?—As far as my information goes, they take the most strenuous action to eradicate the disease on the Continent already; there is nothing that we can suggest to them hardly, and not only so, but the Dutch Authorities, the other day, came and asked us to give them a full account of what we do in outbreaks in order that they might see whether they could improve their own procedure. I know they take most strenuous action in Holland and in Denmark, and in Germany, and in France; I do not know so much about Belgium.

100. But are the regulations very stringent in Germany and in Holland for stamping out these diseases?—I have every reason to believe they are. I know they are in Germany; I do not have the details of the regulations in my head, but I know from my own personal knowledge, from being over there, staying with a high official in Germany who has talked to me about it.

101. And notwithstanding their stringent regulations, they are still full of this disease all over that part of Europe?—It goes in waves there as elsewhere. They have always the danger of it being introduced from more remote countries like Russia. They have a land frontier to guard. You cannot guard a land frontier with any success. But in France they actually stamped the disease out to all appearance, and they were free of the disease for 17 or 18 months; absolutely free of the disease. Then it came in again, and got a hold evidently before the authorities were aware

of it, and they were not able to take the stamping-out measures we adopt. It might happen, nevertheless, at any moment to us in England.

102. There is only one more question I want to ask you, and it is a question about the different articles. I think I had better ask Mr. Stockman certain things about that, but there is one thing which I think ought to be brought out. You have heard, I have no doubt, and I am sure that a great many members of the Committee have heard, a great report which has gone about the agricultural world that this disease has been brought in wilfully; now have you ever had any idea of such a thing happening?—I have heard the rumour, but I have found absolutely no evidence to substantiate it, none whatever. There has been no suggestion of any sort of evidence, I may say, that that could have been done.

103. But you have heard the report?—I have heard the report, certainly.

104. It has been pretty widely spread about?—I do not know how widely it has been spread about, but it has been reported to me by the inspectors.

105. Take, for instance, Smithfield, this year, they were all talking about it there, and saying that kind of thing ought to be seen into to see if there is any truth in it. I do not know how to get at it?—My own belief is, it cannot be true. I cannot conceive what the motive would be, or that there would be a sufficiently strong motive to do it. I have a good deal more faith in human nature than to believe people would do such a thing, considering the awful effects it would have.

106. We have got some very strong competitors?—The only conceivable reason would be to prevent the exportation of pedigree stock to some of the countries. It does not seem to me, personally, to be a strong enough motive.

107. (Sir J. Bowen-Jones.) I have got very few questions to ask you, Mr. Anstruther. I gather from what you say that you are of opinion that the present Acts and Orders are sufficient to preclude the possibility of directly importing foot-and-mouth disease through living animals?—Yes; that is certainly the case, I think. The only danger that remained to be guarded against was that of the possible introduction of the disease at a port by means of infection owing to the transit of cattle from another country or by means of ship's stores—the ship's stores being, I may mention, usually brought in for the purpose of feeding the Lascar sailors, who like fresh meat. It is the habit in certain steamship companies, at any rate, to carry live animals to feed their Lascar sailors. These animals are brought into the port and taken out again. We hope now by means of this new Order of 1910 in future to prevent that occurring. Also there was a certain danger of the introduction of swine fever by the smaller vessels which carried pigs, and were taken up into ports that you would hardly have thought were ports in the general way. For instance, a ship with pigs on board in Gloucester was discovered, which you do not generally look upon as a port in this country, carried by the master for the purpose of consuming the refuse on the ship. That we hope has been brought to an end by means of the Order of 1910.

108. That is Article 2 of the 1910 Foreign Animals Order?—That is so, sir.

109. That is in operation now?—That is in operation now.

110. So the probability of disease from that cause is removed?—It is in operation in the sense that it is the law and it is gradually coming to be the practice. Of course, when the Order first came into force there was a certain number of vessels that continued to bring these animals. In each case the attention of the shipping companies has been drawn to the question, and I think I may now say that it is not likely to occur very often in the future.

111. Now, do you believe that foot-and-mouth disease can arise spontaneously in the country?—I am not a veterinary surgeon, but my own belief is that it cannot.

112. Then we come to the conclusion, and you, I suppose, are of the opinion that the only means by

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which foot-and-mouth disease can break out here is through immediate contagion?—That is so.

113. I think you have thrown the problem of solving the means of foot-and-mouth disease coming into this country by immediate contagion upon the Committee, have you not?—To some extent, sir.

114. You cannot add anything to what you have already said as to safeguarding the entrance of the disease through any of the articles that are imported?—No, my own opinion is that the more dangerous articles amongst those are the sheep's heads and feet and offals, and the trade in calves in their skins. It is possible that one might issue restrictions that would prevent these trades being carried on, but it is clearly necessary in such cases to know first whether the amount of the trade is so great as to make the insurance rates you pay too heavy, and secondly, to ascertain whether any prohibition of that kind can be effectively enforced. That information can only be got from the Customs; the Customs are the people who would have to enforce any Order of that kind, and they would have to tell the Committee whether they would be in a position to put a stop to a trade supposing that it was prohibited.

115. Do you think the exceptions in your Foreign Hay and Straw Order, 1908, the means of introducing this disease?—No, sir, I do not think so; the principal exceptions that might possibly be considered a source of danger is the exception of hay and straw used for packing purposes, used for packing merchandise brought to this country. I think one must admit there is a theoretical risk in the introduction of such hay and straw, but if one comes to look upon the practical question of how you could stop it, I think one must come to the conclusion that it would not be possible effectively to enforce an Order against the packing of merchandise for this country in hay or straw. I have a list here, which was got out in connection with the Hay and Straw Order, of the articles that may come packed in hay and straw; the list is a long one. I think there are something like 60 articles, and I might perhaps give some of them without troubling the Committee with the whole of them: Household furniture is one, I see; bath fittings, chinaware, brasswork, earthenware, porcelain goods, copper cans, drugs and medicines, bananas I notice, eggs in cases, glass bottles, various goods like electrical goods and incandescent mantles and lamps and the like, statuary, hunting trophies, machinery and so on. Well, it seems almost obvious that you could not expect the Customs to open all packages that come into this country to ascertain whether articles are packed in hay and straw; and also, I think, you must take into consideration that, in regard to the great bulk of these articles, the packing material would not be brought into contact with animals. Of course, if an agriculturist imports articles of this kind direct it is quite possible that he might use the hay and straw for bedding down some of his animals; throw it amongst the litter, at any rate, that is used for that purpose. In that case I think you must look to the agriculturist to safeguard himself. The amount of interference with trade in attempting to stop the use of hay and straw in packing merchandise would be far too great an insurance to pay for the possible risk of the introduction of disease by that means, especially since we have got no authenticated case of it having been so introduced.

116. Are you quite satisfied with the reasons for the outbreaks of foot-and-mouth disease that they have been outbreaks of foot-and-mouth disease?—Oh, quite. I may say that I think in every case it has been confirmed by Mr. Stockman, and most cases have confirmed themselves by the extension of the disease to animals on the premises. I think in every case, I may say.

117. In the course of some years we have had very few outbreaks of foot-and-mouth disease, and the consequence is that a great many of our veterinary surgeons would not know practically what the symptoms of foot-and-mouth disease were?—That would be a good argument if you depended upon the local veterinary surgeon for your diagnosis, but we depend upon our own officers who have had ample opportunities of familiarising themselves with the disease. No case is declared unless it is confirmed by an inspector of the Board, and his

confirmation is again confirmed by the Chief Veterinary Officer.

118. You have had no reason to recede from the position that you have taken up, that an outbreak of foot-and-mouth disease has occurred owing to its being not clear?—None whatever, sir.

119. Have you any suggestions to make with regard to the internal regulations and procedure upon the occurrence of an outbreak which you think might be of any advantage to express?—I think we may rely upon our success as ample evidence that our arrangements are as near perfect as human nature can make them; personally, if anybody can suggest to me any further precaution which one can take, one would be only too glad to adopt it, but no further precaution or arrangement occurs to me. We have continually improved, or at any rate, I hope improved, our procedure since 1892, and we are continually on the look-out for any means of improving it, but during the present year there is nothing that has occurred to us.

120. (*Sir Charles Rose, M.P.*) The Orders issued by the Board of Agriculture for the stamping out and preventing the spread of foot-and-mouth disease operate in two ways only, I believe—by isolation and slaughter, and by prohibition of importation of suspicious articles from other countries?—For stamping out, sir, of course, we rely upon the prohibition of movement, only rather—

121. That is the slaughter and isolation?—The slaughter and isolation. The prohibition of importation cannot be regarded as a means of stamping disease out. When we have got the disease we deal with it in the way I have described.

122. I did say the spread of it. I think you are not satisfied. Have you got any *prima facie* evidence that any case that has arisen in recent years has been due to the importation of any suspicious articles?—No; except the Edinburgh outbreak in 1908, which was due to hay—we believe it was due to hay.

123. And your Board was satisfied that that was directly traceable to the importation of the hay?—They were satisfied, yes, and because they were satisfied they made the Foreign Hay and Straw Order.

124. I suppose we shall probably have some further evidence later on as to what guided them or satisfied them? It was due to that?—You will find a full description of it in the Report of 1908, of which copies have been supplied. The hay was imported, speaking from recollection, in November, taken to the premises of this dairyman, and there kept to the end of January when the bale was opened and fed to his cows. Within 48 hours, I think, 81 of the cows were reported as being affected out of 110 cows.

125. After being fed with this hay?—After being fed with this hay.

126. And that was the evidence on which the Board acted?—That was the evidence on which the Board acted. There had been no case at that time in Scotland for 15 years.

127. That was the first case they had had in Scotland for a long time?—Yes.

128. I gather from you it is quite possible it might be imported by a great many other articles than those?—Oh, certainly; including human beings.

129. In including them you have to consider, of course, the general good of the public as to whether the damage to other industries of the people might not be greater than the suggested suspicion of it being imported by other articles?—I think certainly you have to weigh the inconvenience to the public or to a particular trade as compared with the amount of risk which is run. The amount of risk which is run is probably rather small in any particular trade.

130. So, at present, you restrict it to the most suspicious articles which you have direct evidence might bring about the importation of the disease?—We restrict it to hay and straw because these are the only articles of which we have direct evidence.

131. I gather you said to the Chairman that you are not by any means satisfied that this disease cannot be lying dormant for a number of years in any locality, that the germs may not still be there, and circumstances may bring them to light?—Personally, I am

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quite satisfied. My evidence, not being a professional man, would not be of great value; but speaking as an administrator, from information I have received as regards the disease, I am perfectly satisfied it could not lie dormant for that length of time.

132. From the study you have given to this matter, have you any further suggestions to make as to any further steps which ought to be taken. What would you do if you had free autocratic charge?—I think the fact that no other steps have been taken shows that, on the information I have at present, I have not any further suggestion to make or I should have made it to the President of the Board. I think personally that possibly the most dangerous articles that are not interfered with now are sheep's heads and offals and articles of that description and calves in their skins. I think that the danger of these articles spreading disease when they arrive is rather remote, but there is a possible risk of their spreading the disease in transit. They have to be landed somewhere. They have to be carried from that place to the factory to which they are going. If they are infected they may infect the landing stage, and they may infect the cart or lorry in which they are carried. That lorry may be used for some other feeding-stuff for animals, and it might thus conceivably be the means of spreading disease. Whether it would be possible to guard against that by requiring the disinfection of landing places or vehicles, I should hesitate to express an opinion. My opinion at the moment is that it would be very difficult to do. We hope that perhaps the Committee may be able to help us in the matter of inquiring into what the effect of such restrictions would be.

133. Do I understand you to say that it could even be carried in the clothes of human beings?—Certainly.

134. Or birds?—Certainly; it would be only one additional insurance, one additional safeguard. You will never guard against all means of introducing foot-and-mouth disease into this country.

135. (*Sir Harry Verney, M.P.*) I understand 1883 was the worst year there has ever been, and by your referring us to this table which shows that animals were introduced from five countries, you rather imply that there is possibly some connection between the two. Have you any tables for the years immediately before and the years immediately after?—I have handed in a statistical table which goes back to 1870.

136. Do the other tables show that there was less importation from fewer countries, for instance?—I do not think I can answer that question.

137. You see the point you rather imply, by importing from five countries? That was the case of the bad year, 1883. Have you 1886 and 1880: there were fewer countries imported animals?—I think it is admitted that the outbreak of 1880 was commenced by the spread of disease from a foreign animal's landing place, but after it had got a hold in the country the spread through the country was governed by quite other factors.

138. Then, I do not quite understand why you refer us to this table in 1883, on page 18 of the 1883 Report. You attach some importance to the fact that animals were introduced from five different countries?—I rather referred to it because animals cannot now be introduced at all. A large number of infected animals were imported into this country in that particular year, and the authorities of that day maintained that, as a rule, they were not a danger, but now that is a question of ancient history. That condition cannot revive because animals cannot even be carried to this country from any country in which foot-and-mouth disease is known to exist.

139. Then, you told us from 1886 to 1892 this country was free, and then in 1892 the outbreak was traced to animals being imported from Denmark?—Yes.

140. Was there any relaxation, were the officers in charge of the arrangements not quite doing their duty when that was imported, or was it just a fluke that it had not come before?—The state of the law then was that the animals might be imported for introduction inland, not only to the port.

141. So that it was really a fluke that there was nothing between 1886 and 1892?—I think a fluke; yes.

142. There is one small point about the Foot-and-Mouth Disease Order of 1895, the question of the valuation. When an animal is slaughtered the valuation is decided by arbitration if necessary; is not that so? The owner can claim to have his valuation fixed by arbitration?—Yes, full value is given for the animal slaughtered in foot-and-mouth disease. There is a scheme for arbitration in the event of that valuation not being satisfactory.

143. In that scheme it says that if the costs are more than the value of the beasts slaughtered they fall on the owner. I do not know whether you have experience of that having actually happened?—No, none.

144. It is only a theoretical question?—Yes, I think you may say that, generally speaking, the valuation is a very liberal one, and that the owner has no objection to it.

145. That is what I think. There is a point I want to make clear about the question of the germ, whether it can lie dormant for any length of time. Is there any evidence to show the Committee what time of the year the disease is most liable to break out?—No; I think it may break out at any time of the year.

146. I understood you to say, in answer to the Chairman, that the outbreak of 1902 was a continuation of the outbreak of 1901?—Yes.

147. In the Report, the outbreak of 1901 finished in April; the outbreak of 1902 did not begin till March?—No. I do not think I said it was a continuation of the outbreak of 1901.

148. It was a question by the Chairman; he said, "Coming now to the outbreak of 1902, this was, I "suppose, a continuation of the outbreak of 1901," and you said, "Yes." It may have been a mistake of dates?—It must have been a mistake of dates. The outbreak of 1901 was a continuation of the outbreak of 1900. The outbreak of 1902 was probably a direct introduction; I may have made a mistake in answering the question.

149. If it lay for 11 months dormant, you do not think that is possible?—No, I do not think it is.

150. With regard to the outbreak of last year, do you trace any connection between them?—None, whatever.

151. One other question as to the suggestion that it was introduced wilfully. We may differ as to the motive for it; but, at any rate, would it be very easy to do if anybody wished to do it?—Anybody having the virus of foot-and-mouth disease in his possession could easily infect an animal.

152. And it could be easily obtained presumably in a foreign country?—Presumably, it could easily be obtained abroad.

153. And could easily infect an animal?—Yes. That is more a veterinary question really, but I believe you have only to rub the nose of a bovine animal with the infected material and you will be pretty certain of producing foot-and-mouth disease; but that is really a professional question.

154. (*Mr. Lane-Fox, M.P.*) What has been the practice; when is the information published to the world of an outbreak of foot-and-mouth disease?—Immediately the outbreak is confirmed.

155. Is that simply on the opinion of the veterinary officer?—On the opinion of the veterinary officers.

156. Have they any experience of the bacillus?—We have always avoided anything in the nature of setting up an experimental station of foot-and-mouth disease because of the risk.

157. There was an owner of some pedigree stock who had an idea that there might have been a mistake made?—I know that that opinion has prevailed.

158. You are quite satisfied that is not so?—I am quite satisfied it is not so, and I think the mere perusal of the complete list of outbreaks will show that the original outbreaks have spread to animals on the farm in every case. That is in itself evidence.

159. In the Ripon case it did not spread?—On the farm itself; other animals on the same farm became infected with the disease, therefore they did your experiment for you, so to speak.

160. But it is not quite an easy disease to diagnose; but that is more a veterinary question?—That

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is more a veterinary question, but I think you will find Mr. Stockman will say that he is satisfied he can diagnose the disease.

161. Just one more question: You told us in the Edinburgh case, I think it was, that the bacillus had existed three months in the hay. I see the restriction is always removed about a month, or just after a month, after an outbreak has taken place in each of these cases?—Yes, because the life of the disease in the open, after the animals are dead, is not of long duration. It was something quite new to find that, in the exceptional circumstances of possibly damp hay, it might live so long as three months. There were some circumstances in connection with that importation of hay which kept the infection alive longer than ever had been supposed was possible in the veterinary profession. At the same time we have equal experience in the other direction as regards open pastures, and constantly pastures have been re-stocked after diseased animals have been in them. We have kept the animals under veterinary observation for weeks afterwards and never had a recurrence of the disease, not even where we re-stocked a building which had been disinfected.

162. (Major Dunne.) It is quite clear, is it not, that no animals are allowed to land from any foreign country in which we know that foot-and-mouth disease is in any way rampant?—The Board would at once prohibit the landing of animals, even for slaughter, from any such country.

163. After a certain time a foreign country may claim, may it not, that it is clear of infection?—It may make representations.

164. It may make representations. What steps would the Board, or would the Government take to ascertain whether that was the case or not?—Well, they would have to satisfy themselves as regards that country, not only that the disease had been stamped out, but that the conditions of Section 25 of the Act were fulfilled.

165. We should have to depend very much upon the *bona-fides* of the country concerned?—Obviously.

166. We cannot take any actual practical steps ourselves; we must rely entirely on what they say, that the area of the country is clear of infection?—We rely on that, and also on the lapse of time. I do not think that the Board would ever withdraw restrictions until the lapse of a period of something like six months. That has been the generally accepted rule. Where the country has been clear of disease for six months, and where all the other conditions are fulfilled the restriction might be withdrawn. That was, in fact, the course followed in connection with Argentina in the year 1902, I think it was, and, in fact, the disease again appeared in that country within three months; then the prohibition was again imposed.

167. You told us that so far as you personally are concerned you cannot offer to the Committee any further restrictions or safeguards in connection with the infection or a spread of the disease. Is that the opinion of the Board of Agriculture as a whole or are you only giving that opinion as your own?—Oh, I think it may be taken as the opinion of the Board because they have taken, in fact, no further action.

168. Then there is one small point in connection with the outbreak at Ripon in 1910. Can you give us at all what the Orders in force, as regards the cleansing and disinfecting of lorries are, because you mentioned it might have been due to the use of the lorries or trucks?—1910 I think you mean.

169. 1910. You could not give us what the Orders are as regards the disinfection of lorries which carry heads and so on?—There are no Orders,

170. There are no Orders?—No; I have suggested, as a possible further safeguard, some Order requiring the disinfection of vans and lorries carrying heads.

171. And even of railway trucks, too?—And even possibly railway trucks, if it is practicable.

172. We all know that cake is continually coming, not in bags, but loose in trucks. If those trucks have been carrying hides and have not been disinfected there is a certain amount of possibility, I suppose, of

the one being transferred to the other through the cake and so to the animal?—There is a certain possibility of it. I should personally think that the risk taken over a series of years must be very small, and the cost and inconvenience connected with any method of disinfection would be a very large one, and the Committee would have to balance the one against the other in considering whether it would be wise to recommend any steps of that kind as an additional precaution.

173. (Mr. Bathurst, M.P.) From your figures, these outbreaks used to take place at intervals of two to three or four years. Have you any reason to suppose that there is anything to be founded on that fact, that it is an intermittent disease with certain more or less definite influence?—I did not know that I had conveyed that suggestion in my evidence. There was a period of six years between 1894 and 1900.

174. Apart from that, I notice that there are intervals of from two to three or four years between the outbreaks that you first mentioned?—Oh, in the earlier years.

175. Yes?—I should say as regards that, that there is no very strong evidence that the disease had really been eliminated during that period.

176. Do you happen to know whether in those intervals the disease was prevalent abroad?—I could not say.

177. Are the more serious of our outbreaks here simultaneous with the most serious outbreaks abroad?—I think, speaking generally, they are; that whenever the disease is really very rife—to use a Scotch expression—on the Continent we are more likely to get it in here. I notice in the Report for 1892, for instance, it is stated that the disease was very prevalent on the Continent at that time, and again it was very prevalent, I think, in the year 1900, when we got the other severe outbreak of disease in which the infection was probably introduced several times during 1900 and 1901.

178. It seems to me to be a matter of some importance; do you happen to know whether between the years 1902 and 1908, when we enjoyed immunity, there was very serious disease abroad?—I have not got the figures for the disease abroad, but I know that the disease became more prevalent abroad last year when this further outbreak occurred.

179. But, you will admit that that is an important matter in seeking for the source of the disease to ascertain whether it does in fact exist abroad when we have serious outbreaks here, or *vice versa*?—I think it would be quite an important matter, but the foreign statistics, at any rate in the more remote days, are very difficult to get; and even at the present time they are rather difficult to bring into any uniform table, because it would very much depend upon how the country deals with their particular statistics. I think you yourself in Parliament have asked questions on that subject, and it has been explained that we are not fully informed as to the method in which the statistics are prepared, and we are now at the present time trying to get further information on this point.

180. As a matter of fact, is the disease exceptionally prevalent on the Continent at the present time?—Certainly.

181. Compared with previous periods of serious outbreak?—It certainly is very much more prevalent on the Continent now than it has been for the last, we will say, four or five years. The statistics of disease abroad for other periods I have not got with me, but I have gathered information from the Reports.

182. Can you say what are the countries where it is most seriously prevalent to-day?—It is very prevalent, I know, in France, in Germany, in Belgium, and in Holland, and it has now been extending latterly in Denmark, that is to say in practically all the countries bordering on the English Channel and the North Sea, which are now more or less seriously affected with foot-and-mouth disease; whereas if you were to take the figures of a couple of years ago, you will find that is not the case. France at that time was for the first

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time in its history free from foot-and-mouth disease for a period of, I think, seventeen or eighteen months.

183. Is it not particularly serious in Russia?—I think it always exists to a greater or less extent in Russia.

184. And is it not the fact that in Russia, at any rate, there are no very strenuous measures taken, as in certain other countries, to restrict its spread?—I should think that is very possibly the case, but I have not any definite information about the steps taken in Russia.

185. The importation from Russia of cereals and feeding-stuffs generally is considerable into this country, is it not?—I know that there is a very large importation of oats, for instance, from Russia, probably principally used for feeding horses, but certainly some of it would go to farms. In connection with the Chobham case, in which I told the Committee we could find no definite clue, one of the substances upon which suspicion was thrown was the importation of Russian oats. A very large quantity was introduced in that particular vessel in bulk, put in bags at the wharf in Battersea, and distributed all over this country, more or less. A comparatively large quantity was taken to Surrey, and we ascertained that it had been distributed through various other agencies besides the agency which distributed it to the owner in the Chobham outbreak. In no other case was any infection introduced. There, I think, the inference must be that since it was brought in bulk and bagged in Battersea it is extremely unlikely that a small quantity of those oats could have been infected and should have happened to be put into the one bag which went to the one farm at Chobham.

186. Have you found foreign oats on the premises in any of the recent outbreaks?—Offhand, I should say not; but that I think I should have to look up.

187. Is not that rather a remarkable fact in view of the enormous quantity of foreign oats that are now being consumed in this country?—As I say, my own impression is that most of these foreign oats go to feed horses.

188. Do you consider that oats are a possible source of infection?—Anything is a possible source of infection if it gets infected before it starts, so to speak, and any product of a farm in a country where the disease exists might conceivably get infected on the farm before it has left the farm; but oats in themselves are not dangerous, of course.

189. I am going to ask you rather a straight question upon a subject which has exercised the minds of many agriculturists. What means would you employ when an outbreak takes place to find out whether or not that outbreak is due to the consumption of feeding-stuffs from abroad?—Well, in every case we inquire whether feeding-stuffs have been introduced.

190. Of whom do you inquire?—We inquire of the owner where he had been buying all the feeding-stuffs he has had on his premises. If he says—take the Chobham case—that he had been buying oats from a firm in Battersea, we go to the firm in Battersea and we ascertain where they imported their oats from? In that particular case we got the actual name of the ship that introduced the oats, the actual number of quarters of oats carried in the hold of the ship, and we got from the firm in Battersea the distribution of those oats. As I say, they not only went down in one or two or more different consignments to Surrey, but they went to other parts of the country.

191. Supposing you had a statement from him that he was using no foreign feeding-stuffs, would you take that as sufficient?—I think so.

192. I notice from the Report of the year 1908, in referring to the Edinburgh outbreak, the suggestion is in fact made, although the Foreign Hay and Straw Order was the result—the suggestion is in fact made in the Report that the probability was that the hay must have by some means been contaminated during transit to the seaport?—Yes.

193. That is to say that it was not contaminated apparently before it was exported from Holland, but that it was contaminated in the course of transit to this country?—I think I explained in my principal evidence that the inquiries in Holland showed that there was no foot-and-mouth disease on the farm from which

that actual hay came. I think the presumption is that it got contaminated in Holland, possibly at Rotterdam in which neighbourhood the disease was comparatively prevalent at the time, and before it was exported from Holland to this country, but we could not establish the fact that the hay had been brought from an infected farm in Holland. On the contrary, all the evidence was in the opposite direction.

194. But your evidence has rather suggested to my mind, and possibly to the minds of some of my colleagues, that you regard the state of the ships which carry these cargoes with some little suspicion as a possible source of contamination?—I think we regard it as possible that the same ship may have carried heads or other substances that may be infected and might infect food-stuffs during the transit, but these latter inquiries about the ships were particularly directed to the question of anthrax.

195. Do you consider that your Department is doing all that it is possible to do under the existing law in preventing the carriage of infection from hides to feeding-stuffs on shipboard?—Well, of course our Department have very little jurisdiction as to what happens on shipboard. The only jurisdiction they would have is if they are prepared to state that the disinfection of the hold of every vessel that carries hides is reasonably necessary in order to prevent the introduction of foot-and-mouth disease into this country. I do not think in any outbreak of foot-and-mouth disease we have any case on which we could base an Order of that kind.

196. I think I am right in saying you suggest that a warning which in 1905 you issued to shipowners has not been taken much notice of?—I believe that to be so; yes. That notice was principally directed against the danger of the spread of anthrax by such means.

197. But you admit, in this connection, what may be a source of danger in the case of anthrax is a possible danger in the case of foot-and-mouth disease?—Yes.

198. Is there any possible means by legislation or by administration, in your opinion, by which some provision could be made against this possible source of contamination on shipboard?—I think some provision could be made by the requirement of the disinfection of holds of vessels, of landing-places, and of what you may call public vehicles, vehicles used by several different owners carrying articles of this character; if the amount of inconvenience and the cost entailed is not too great an insurance to pay to guard against the particular risk.

199. And with that proviso that is a recommendation that you would make?—I do not think it is quite for me to make a recommendation.

200. At any rate, you are in the position of chief administrator of this particular department, and you think that that would be an advisable course to take?—I should like to consider that, after hearing from the inquiries of the Committee the amount of inconvenience and the loss that would be entailed by any such Order. It would be for the Board then to consider, if the Committee made such a recommendation, the evidence upon which they based it and the amount of inconvenience that would be entailed.

201. When you speak of inconvenience, what sort of inconvenience do you contemplate?—Inconvenience to the handling of goods and the carrying on of a trade.

202. I am talking now of shipboard; about the holds of ships particularly?—Well, it might possibly delay the ship from going to sea again if it were necessary to disinfect the hold after landing hides. If the vessel arrived at Hull and wanted to go on to Leith and she could not leave the port until disinfection had been carried out, it might involve demurrage charges and inconveniences of that kind; one does not know.

203. Is disinfection in such a case as this either a costly or a prolonged process; how do you disinfect?—One would only use the usual means of disinfection, thoroughly cleansing and scrubbing probably, first covering up the hold with the disinfectant, and then scrubbing it again, and then possibly again disinfecting it. In the case of foot-and-mouth disease that disinfection might be quite effective, but in the case of

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the spore of anthrax it is probably doubtful whether the disinfection would be sufficient to destroy it.

204. Considering possibly the costly results both to our stock owners and to the country, both the cost and the labour would not appear to be excessive?—The cost and the labour would be thrown on the shipowners, and one would have to justify one's action in calling upon them to undertake it.

205. With regard to the Hay and Straw Order of 1908, can you tell me what is the meaning of the exception No. 2 (b), Manufactured straw not intended for use as fodder or litter for animals? In what form, or what are the chief forms in which manufactured straw would be imported?—Well, one has had in mind the question of the articles like straw hats, baskets possibly made of straw, bottle covers; straw is largely used for covering wine bottles. These sort of articles one had in mind in making that exception.

206. And then (d), Hay or straw which is authorised to be landed for use otherwise than as fodder or litter for animals. Where you grant a licence, what sort of straw would that be as a rule?—Well, principally straw used for making horse-collars, and also for thatching purposes. All that straw is specially harvested straw; it is of no use if it is put to a threshing-machine. It is hand threshed, and brought in for making horse-collars and for thatching. Those are the two principal objects it is used for.

207. A great deal of that straw is used for horse-collars and also for the commoner kind of saddles. I happen to know there is a considerable industry in the manufacture of cheap saddles in certain parts of the North of England. That does go to a large extent upon farms?—In the saddles.

208. In the saddles and collars?—Yes, but we are taking steps with the straw itself, it has not left the factory in which it is imported; it is used actually and made up into the collars and the saddles before it leaves the place.

209. Do you think that is a possible source of infection?—I should have thought a very remote possibility.

210. Is there any reason why it should be disinfected before it is used for these purposes?—I have never considered that point.

211. I ask this because there is a strong feeling, at any rate in a certain part of England at the present moment, that this is the chief source of the recent outbreaks?—Straw imported for the making of horse-collars or saddles?

212. Yes.—I have got no evidence to support that theory, and I should have thought once covered by the covering of the saddle, or the covering of the collar, the chances of it conveying infection to the animal would be most remote.

213. From the Hay and Straw Order of 1908 you say Norway is excluded?—Norway is excluded.

214. Is Norway the only country in Europe that is excluded?—I think I may answer that question in the affirmative. At the time the Order was passed Denmark and Sweden were free of foot-and-mouth disease and they were excluded, but now they have been added, and I think I may say confidently Norway is the only country in Europe from which straw can be imported.

215. Do you think that safe to exclude a country which has a land frontier to another country that is known to have a disease?—In the absence of any outbreak in Norway, I think so.

216. Would there be any great hardship in making the Order apply to every country in Europe?—I have not before me the figures of the importation from Norway. I believe they are comparatively small, as a matter of fact. On the other hand, I may mention to the Committee that the horse owners—this applies to hay rather than to straw—are feeling very much the increased price of hay at the present moment, and are urging the Board to some alteration of the Order, in order that they might get hay from those countries to forage their horses. The danger of feeding horses with such hay is probably very small, but the difficulty is to make certain where the hay will go to after it is landed.

217. You mention that the United States and Canada are omitted from this Order. There is a considerable importation of hay from Canada and the United States. I do not know that one can distinguish which is actually of Canadian origin, because a lot of it may come through the United States ports, but between the two there is a considerable quantity of hay imported. Do you think there is any source of danger in such hay?—None whatever, because we are quite satisfied that both the United States and Canada are very free from foot-and-mouth disease. In the event of the disease appearing here the Foreign Hay and Straw Order would be made to apply to the same district as that to which the Prohibition Order applied.

218. I want to ask you whether it is possible to test the effect, to attempt to discover the source of foot-and-mouth disease by feeding to sound animals, upon a farm where an outbreak takes place, feeding-stuffs that have come from a foot-and-mouth disease infected country?—If you chanced to feed them upon infected material they would no doubt get foot-and-mouth disease.

219. But that would be the object of the feeding, to ascertain. You have ascertained by experimental purposes, but the object, of course, would be to ascertain whether it is possible for the disease to be communicated as the result of feeding these articles. Is not that possible and desirable?—It is certainly possible; I should not have thought it was desirable. I should have thought that the fact that if the material was contaminated it would be communicated to the animals was an almost obvious one. If you did make such an experiment you might end in setting up an additional diseased centre in this country. You would have to take the animals to some place where you would feed them with a view to deliberately setting up an additional disease centre, with all its attendant risks.

220. On another part of the same premises, or on adjoining premises?—But we kill them at once, you see, now. Your suggestion is that we should keep them alive and try and infect them with foot-and-mouth disease in order to test the feeding-stuff.

221. Keep certain sound animals, or apparently sound animals, alive for the purpose of testing the effect of feeding with suspected feeding-stuffs?—If you use animals on the premises at the time of the outbreak you would not be perfectly certain that your experiment would be of any value, because the animals might be infected beforehand.

222. No, but if you take a certain number of apparently sound animals, not necessarily on the same premises, and feed them with the same article on isolated premises, that surely would be the most natural test to apply in order to ascertain whether the feeding-stuff was the source of the disease?—Well, you have to assume that that consignment of feeding-stuffs was equally affected throughout. The possibility is that infection is introduced in that way, that there is only a small portion of that consignment affected, and that you might go on feeding for months without getting any effect.

223. You do not think that is worth trying?—I do not think that is worth trying—it is more a professional question than an administrative one.

224. I suppose you are aware a large number of the leading veterinary surgeons in the country have suggested that as a proper course to take?—I have not seen the absolute expression of that opinion, but it may exist.

225. You would not approve of it?—I would not approve of any procedure that would set up another diseased centre if it could be avoided.

226. You mentioned a list of articles imported into this country, set out in the Report of the Inspector of 1900 as possible sources of infection. Amongst them I notice butter. There is a largely increasing amount of butter, is there not, imported into this country?—I believe so, yes.

227. Largely from Denmark?—I believe so. I have not got the figures before me, but I am quite prepared to accept it as a fact.

228. Where there have been very serious outbreaks of foot-and-mouth disease?—The disease has been

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spreading latterly in Denmark, but it has not been a badly infected country compared to the other countries.

229. You mentioned in connection with one outbreak as being the most serious source of disease?—I mentioned that disease was believed to be carried by crows to Denmark. I had the figures as to the Denmark outbreaks before me two or three days ago. The disease has spread there, but it is not one of the seriously infected countries.

230. Is it your view that butter is a possible source of infection?—Perhaps I might ask you to refer that to the veterinary authorities, but all milk products, I understand from Mr. Stockman, are possible sources of danger, principally through the medium of the pig-pail, from feeding pigs on the refuse.

231. These are proper questions to ask Mr. Stockman. It would be very suitable to ask him my last question! As you say you doubt very much any wilful introduction of the disease into this country?—Yes.

232. Have any inquiries been directed towards ascertaining whether anything of that sort is going on?—That point has been before the minds of the inspectors concerned certainly for the last year or eighteen months, and if they could have found any sort of evidence of that kind they would have brought it to the notice of the Board.

233. You suggested there was not sufficient inducement for an ill-intentioned person to convey disease into this country?—I do not think the inducement is great enough.

234. There is a large corporation, if I remember right, interested in the meat trade abroad, or at least more than one; I think there is more than one large combine interested in the meat trade abroad that might be tempted to adopt such methods, is there not?—There is certainly a large combine interested in the meat trade. I can hardly see myself what advantage they would get by preventing pedigree stock being exported from this country, which would be the only possible result.

235. Is that a necessary assumption? Would they not also be interested in meat being scarce in this country?—I do not see the point there; I do not see how infecting animals with foot-and-mouth disease in this country would necessarily make meat scarcer.

236. Let me take you back to what you are possibly not aware of, that between 30 and 40 years ago the most serious cattle diseases occurred from which this country has suffered, meat was getting scarce and was getting very dear?—You are assuming then the effect of this intentional contamination would be to try and affect the whole of the country with foot-and-mouth disease.

237. That is so.—I have always had in mind that it might possibly be the means of preventing the exportation of pedigree stock in the interests of pedigree stock-owners in the Argentine.

238. I am making a totally different suggestion?—I had not grasped that.

239. You think there is probably no ground for the suggestion?—I do not think so, no.

240. There is one question I have been asked to put to you in regard to these zones; you have not actually mentioned except in one case what the radius of the zone is. What would be the radius from the centre of infection to the limit of the outside zone?—Well, as a rough guide, we take 15 miles.

241. Do you not think it is possible that with as severe or severer restrictions within a more limited area you would effect your object without dislocating trade to the extent to which it is dislocated to-day?—I think it is quite possible. At the same time we have proof now with the experience of a number of years that our present procedure has been effective.

242. Including the limit of 15 miles?—Including the limit of 15 miles. It has been in operation you may say for the last ten or twelve years. It is quite possible to water that limit down and reduce it to five miles, but if you once start on a course like that you would be pushed on from step to step until you actually took a limit not sufficiently large, and you miss your whole object. It would be very dangerous advice to give to

any President of the Board, that he could reduce that limit which has been proved in practice to be effective.

243. Foot-and-mouth disease is not a serious disease, is it?—It is not a deadly disease.

244. And it is one which it is comparatively easy to cure?—It is comparatively easy to cure.

245. And the symptoms are very easily recognisable?—So I understand.

246. It is probably the easiest of all cattle diseases to recognise by the appearance of the animal?—That, again, is a professional question. On the other hand it is one of the most virulently infective.

247. (Mr. Hinds.) Do any foreign countries take precautions that your Department do not?—Not that I am aware of.

248. If an outbreak took place in the country, would it be a long time before you came to know of it. If an outbreak took place in a distant part of the country—say a distant part of Wales—miles away from a railway station or anywhere else?—We must depend entirely upon the owner to report it.

249. He would not know the disease, would he? You have just told Mr. Bathurst that the veterinary surgeons know it very easily; would the local man know it?—I think even nowadays the bulk of the profession would know it, but I do not know that by any means all the owners would know it, and therefore we always run a risk that the disease may exist for some time undetected. In Somersetshire, in fact, we know it had existed for four days, certainly the typical appearance of the disease was observable on the Monday, but it was not eventually reported to us till the following Thursday. That is a risk we always must run, and if it had so chanced that these animals, or some of them, had been put into a market at that time, we might have had the disease spread all over the country, that is the risk we continually have to face; I know no means of guarding against it.

250. Has the cleanliness of the farmyards and cowsheds anything to do with it? Is it possible at all for this disease to arise from the cowsheds?—I understand the professional point of view is that it is quite impossible. The infection must be introduced.

251. You are of opinion, of course, that some regulation is required with regard to the importation of feeding-stuffs?—I do not know that I can say "yes" to that. I think, as I said before, it all depends upon the amount of insurance you are prepared to pay. Of course, the amount of feeding-stuff introduced is very large. Certain classes of food-stuffs come in in enormous quantities. No doubt the Committee will wish to ask for statistics in regard to particular articles when they have considered the line of inquiry they wish to follow; but oats, I understand, are imported in enormous quantities, and to attempt to restrict that importation as a safeguard against the possibility of infected oats being introduced would, I think, be paying too large a premium for your insurance; but that, again, is one of the objects of the appointment of this Committee, to investigate these points more fully.

252. Are you of opinion that the importation of foreign foxes is sufficiently safeguarded?—Their importation is controlled by the Importation of Canine Animals Order. The foxes now would not be released from quarantine for a period of three months after their importation. That precaution is directed more to prevent the introduction and the spread of rabies than foot-and-mouth disease; but I think you may be perfectly sure that an imported fox that has undergone quarantine for the purpose of rabies would not be likely to introduce foot-and-mouth disease.

253. Do you believe that the destruction of the animal is absolutely necessary for the checking of the disease?—No.

254. You believe it is often necessary to destroy the animals?—No; I do not know.

255. You believe it is absolutely necessary to destroy the animals to check the spread of the disease?—No, I do not.

256. (Mr. Nunneley.) You say you do not think foot-and-mouth disease can break out spontaneously, no matter what condition the animal has got to?—I take my information from the veterinary authorities. That

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is the opinion I have been brought up to believe, and I still hold.

257. Have you any information how it came into this country in 1839? That was the first outbreak?—All we know is that it was introduced at a time when animals were not in fact allowed to be landed in this country. Therefore the inference is that it was brought in by some form of mediate contagion.

258. You do not think that that first outbreak was spontaneous in any way?—I have no opinion on the subject; I have got no facts to go upon.

259. When was the slaughter of home animals which are infected first resorted to?—I can only speak for the experience of the Board of Agriculture. Certainly Lord Carlingford makes it quite clear in his speech that I have quoted from that it was not the practice prior to 1884. In 1892, in the first years of the outbreak, the Board attempted to stop it by slaughter of all the animals on the premises. When the disease got such a hold on the country that this course appeared to be inexpedient they resorted to isolation. Towards the end of these outbreaks—gentlemen will remember the outbreak at Sittingbourne: I was there for four months myself—we again attempted to finish the matter by slaughter. That slaughter was ineffective, and the disease again spread locally. It never went outside the radius of from five to seven miles, and then we resorted to a period of isolation again, and just as we thought that the disease was finally stamped out, it re-appeared in the middle of the marshes in the Sheppey. I went there myself. As far as I could see you could see sheep. The diseased sheep were in the middle of the marshes. The only hope of trying to stop it spreading through the marsh was to try slaughter, and that luckily was effective.

260. When was that?—1892. Since then the Board have weighed each case and decided on slaughter or not. In all the later outbreaks they have ordered it almost as a matter of course after we had satisfied ourselves as far as we could that we were dealing with the real centre of the disease.

261. But the bad outbreaks of 1870 and 1871, and 1883 and 1884, 1883 especially, were stamped out or died out in some way without slaughter?—Yes, I believe so. Of course, slaughter is not necessary to deal with foot-and-mouth disease; but the advantage of it, when you have got an initial outbreak, is that you destroy the virus at the earliest possible moment.

262. When was the importation of cattle from countries where disease was known to exist, or at any rate not known to exist, first prevented? They are not allowed now to be landed for slaughter from such countries?—No.

263. When was that first prevented?—Well, the new position arose in 1896. That Act prevented the landing of animals otherwise than for slaughter. From that time onwards the Board have only had to exercise their discretion in regard to the landing of animals for slaughter, and such landing is prohibited wherever they were not satisfied as regards any specified country, or part of a country that there is no risk of the landing of a diseased animal from that country. That has been the law since 1884. It related to the earlier days, also to the landing of animals other than for slaughter.

264. In 1883 there was a large number of diseased animals known to have been landed?—Yes.

265. Well, were they all slaughtered at the port of landing, or did many of them escape?—They were not landed for slaughter, but for transit inland.

266. They went inland?—I got this from Mr. Smart, whose recollection goes back to those days. The practice in the earlier days was that the Veterinary Inspector appointed by the Customs inspected the animals on landing and picked out those visibly affected. In the case of a diseased cargo these were slaughtered at the place of landing and the remainder of the cargo sent to Islington Market. They were again inspected there by the Veterinary Inspector of the Corporation of the City of London, who picked out any visibly affected, and the remainder, probably with the disease in an incubative state, were then sold and the beasts distributed throughout the country.

267. That would account for the bad outbreak in

1883?—I think it is quite easy to account for the introduction of disease under those conditions.

268. To come to this other point about the hay and straw; that comes in from abroad. You say there is no foot-and-mouth disease in the United States and Canada?—No.

269. With regard to the other you seem to think that it is more likely to come with calves or offals and so on?—I think those are the most dangerous sources which are not guarded against in any way at this time, how dangerous I am not prepared to say, but they are probably the most dangerous.

270. There is no precaution taken in any way against hay or straw used for packing in any way at all?—Used for the packing of goods introduced in this country.

271. Yes?—We do not licence the landing of foreign straw to be used for packing purposes in this country.

272. It comes in as packing for foreign goods?—Yes, because it did not seem to be practicable to prevent it.

273. You do not think that any means could be taken with regard to that to guard against any infection by ordering them to be destroyed in any way?—I do not see how you can enforce its destruction.

274. I am inclined to agree with you in that, but my theory is that there is more danger there than anywhere, because I do know, as a matter of fact, in counties things come into the tradesmen packed in this straw. It is thrown out in their stables for a day or two, and frequently within a week it is carted by farmers in the neighbourhood into their yards, and they throw it down among their cattle?—I think that is quite possible. Of course the chances of that straw being infected, you have to consider first, are not probably very great, but I should be perfectly prepared to deal with such hay and straw if I saw any practical way of doing it. The Customs would be the first to say that they could not enforce such an Order.

275. No. You speak of the danger from carcasses of calves, and so on. It seems to me the other is much more dangerous, because these carcasses do not come into direct contact with the cattle afterwards, and the hay and straw does?—It is a question of practicability.

276. My idea was whether it could in any way?—I have never been able to conceive a way. Suppose you yourself individually received a parcel from abroad on your farm, and if so, whether you destroyed the straw after it arrived, or not, I am quite sure you would be inclined to resent an inspector asking whether you did so or not.

277. It is a difficulty, but my opinion is that that is the greatest danger we have to contend with. You have no means of knowing at all how far birds carry it. You speak of that. Do you think it possible for birds to carry it across the Channel?—If a bird got his foot infected in a field and flew across the Channel and alighted in this country, I think undoubtedly he could carry the infection.

278. I have always thought it was carried in that way. In England three or four miles?—It could be equally carried in that way across the Channel; it is only 21 miles from Calais to Dover. You cannot guard against that.

279. That would be impossible, but it seems to me these outbreaks have not occurred in those animals which would be most susceptible?—We had several outbreaks in Kent in the early part of the century, which might be conceivably due to that.

280. Not so much this last two or three years?—Not so much this last two or three years, but those outbreaks in the north of Kent might conceivably be due to infection carried in that way. We have no evidence. In the Eastern Counties there were several outbreaks in 1900, 1901, and 1902.

281. With regard to the hay and straw no special inquiry has been made as to whether foreign hay and straw which had been used for packing had come on those farms?—I think we have always tried to ascertain that.

282. Coming from tradesmen in neighbouring towns?—Perhaps you would ask Sir Edward Clarke

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more about that, because he has made actual inquiries on the spot. He always had that possibility in his mind.

283. Having regard to Russia, I believe the disease is rampant there now, and has been for some time. I fancy you say you do not know whether they have been taking precautions other countries had?—I am afraid I do not know the actual precautions taken there.

284. Mr. Bathurst spoke about a large quantity of Russian cake that comes as well?—Again I think that perhaps the Committee will be best able to elicit that information from other witnesses. I do not personally know the amount, but a quantity of feeding materials come from Russia undoubtedly.

285. (*Chairman.*) We must get all that from the Customs, I think?—You can get it from the Board's Statistical Branch. If the Committee will say what particular information they want we will furnish it.

286. (*Mr. Nunneley.*) With regard to the theory which has been advanced as to whether the disease has been purposely brought in I strongly agree with you that it seems hardly possible. My idea was that if you prevent exportation of pedigree cattle or sheep. These outbreaks have not occurred I think as a matter of fact at all, especially in those districts from which cattle or sheep are exported; rather the other way, I think, from what I know?—I should say you are probably right.

287. For instance, Lincolnshire exported sheep very largely, and there has been no outbreak in Lincolnshire for years?—It is a district famous for the exportation of stock, I believe.

288. There have been no outbreaks of this disease either at or in the immediate vicinity of any well-known pedigree place where cattle are exported; not on the premises?—Not on the premises certainly. One of the comparatively well-known breeders was involved in the Middlesex outbreak, but only incidentally because his premises came within our 15-mile area.

289. There was nothing at all in that to support the idea?—Nothing, besides which the outbreak occurred in the premises of a small pig-keeper at Hounslow. Given that you had a man of malicious intent, I do not think he would have been sufficiently ingenious to go to a small pig-keeper in Hounslow and introduce the disease.

290. (*Mr. Richardson Carr.*) With regard to the account which you have given us of the numerous outbreaks since several years back, I notice there is only one case which has occurred in the Channel Islands. Is not that so?—As far as I know, that is the only case.

291. Has it ever occurred to you why that was at all, that the Channel Islands should have been so immune from a visitation of this sort?—No, I do not think it has.

292. Are they more particular with regard to their cattle coming into the island and their food-stuffs than we are?—I do not think they can be much more particular than we are as regards cattle, except that they do not admit any animals from foreign countries for slaughter as they do not have a trade there.

293. Do they have any hides coming there?—I could not tell you.

294. I do not know whether it would be worth while trying to find that out because I am rather led to think that they are a good deal more particular about everything of this sort. I think ships, if they have carried cattle, even if they have not touched France, are not allowed to have cattle in them for 14 days afterwards?—That would apply in this country too, that no vessel which had called recently at a port in a prohibited country could bring cattle here.

295. And also, no doubt, the hay and straw that goes in there?—I believe they prohibit, or practically prohibit, hay from France.

296. I do not think any goes in from France?—I have no doubt the Government of Jersey and Guernsey would give you information.

297. I think it would be rather useful to get it; I fancy we shall find that is so?—You would have to deal with the two bodies or get it through the Home Office. Probably the Home Office would get it for you.

298. I understand what you say. We may not be able to stop certain things, but it is part of our duty to try and find out what may be the cause of the spread, even if we cannot stop it, and I rather fancy from what I have heard and the inquiries I have made that they are very particular about everything of that sort?—I know the Jersey authorities are watching the matter very closely, and in the last few weeks have asked the Board, in the event of their having an outbreak of the disease in Jersey, if they would send one of their inspectors to help them. We agreed to do so.

299. I think it must be successful. If it did get there it would spread more rapidly than here. They are more or less together?—I have never been there.

300. I fancy so. I think they would very likely go down like a pack of cards if they did get the disease in. Do you not think that being so close to France rather does away with the theory of the bird question? Do you not think that if it were brought over by birds they would get it in Jersey as soon as anywhere else?—I think the risk from birds is a comparatively remote one. If there is a risk it is, so to speak, a fluke that they have not suffered from it in the same way as we do. I do not know that we have ever accounted for how the outbreak referred to was brought in.

301. I was going to ask you whether that has ever been accounted for?—I do not think that it has.

302. It only occurred once in Jersey?—So far as I know.

303. It might be useful to try and find out?—At any rate within the time of the Board of Agriculture; I did not go back to see if in earlier years Jersey had ever had it.

304. I fancy they have only had it once for several years past. Although you do not say that slaughtering is absolutely necessary, I take it you would be very sorry from the Board of Agriculture's point of view to see the slaughtering not taken as the means to try and eradicate it?—I always think that in an initial outbreak if you feel certain you have got the real centre of disease, it is worth while trying if you can stop the disease by slaughtering.

305. Would you rather stick to the slaughtering at present?—I would always agree to slaughtering under those conditions, but not as a general principle that you should always slaughter without reference to the circumstances of each case.

306. In all recent cases you have slaughtered?—In the more recent cases.

307. With regard to the hay and straw for packing, I can understand that it would be very difficult to stop it, but why do you think there is less risk about hay and straw used for packing than with the hay and straw coming over for food?—For food?

308. Well, for feeding?—That is prohibited.

309. It is prohibited because there is a risk attached to it?—Yes.

310. You said you did not think the risk was very great about the hay and straw being contaminated?—I had also in mind its destination.

311. It might be in effect just the same?—It might be in effect.

312. When it comes to London I thought all the hay and straw found its way back to the farm?—Yes, it largely comes to horse stables.

313. In London, and that is sold in boat-loads and train-loads as manure to all the counties around London. I believe every bit of straw used in wine-bottling places ends its day on the farm?—Possibly.

314. I cannot help thinking that it might be just as risky as if the hay came straight over—about which I have no knowledge—unless such time elapsed that the germ would not live?—I think, obviously, the time has to be taken into consideration.

315. But it would not be so very long as a rule?—It might not be.

316. With regard to the hides and the cleaning of the vessels, that surely must be a very great source of infection. You think it would not be possible to try and devise some means of disinfecting the holds where these hides have been stored previous to carrying food-stuffs for cattle?—I think in that connection it might be well for the Committee to consult the Board of Trade and

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also the Home Office in connection with the carriage of anthrax to human beings, and so on. The Board of Trade and the Local Government Board are interested in the matter of such things as carrying plague, and they have rather taken the view, in connection with the warning notice the Board issued, that inasmuch as they did not feel that they were in a position to make such requirements to prevent plague in human beings, they did not feel that they should support the Board in any action with regard to the prevention of the carriage of disease to animals. They were not quite satisfied, we were then considering principally anthrax, that the disinfection would be effective, and they did not consider, as I gather, that it would be practicable to carry it out, taking the shipping trade generally, and to require any general disinfection of vessels. If the Committee were going into that point I think they should take evidence from the Home Office and the Board of Trade on the subject. Of course, they are authorities who know the business of shipowners far better than the Board of Agriculture can.

317. Do you know any advantage in these calves coming over with their hides attached to the carcase?—It is a question of marketing them. I rather fancy it is not very easy to sell a calf, that is, not in its skin.

318. (*Mr. Field, M.P.*) They are easier carried?—They are easier carried.

319. And carried more safely? If the hides were taken off they would have to be put in baskets?—Yes.

320. (*Mr. Richardson Carr.*) Do you think it would be at all advantageous or possible, if this country had inspectors on the Continent for a time, now that there is so much foot-and-mouth disease, to make inquiries and ascertain any local source of infection abroad in places like France and Germany? It would be like inspecting the ports of embarkation; I mean whether they should be carefully watched or whether anything of that sort could be done?—I have never had that point put to me, but I do not quite know what the inspector would watch, because you cannot see the germ of foot-and-mouth disease, unfortunately.

321. He would not be able to see it, but the question is whether he could find out any infected spot? You do not think that would be much advantage?—I do not quite see what the man would do when he got there, but one could think that point over.

(*Mr. Field, M.P.*) You would have another spy scare with them.

322. (*Mr. Morrison.*) I believe you are satisfied that the regulations as regards the control of the disease, once it breaks out, are quite good enough?—I think we appeal to our success in the past as an argument in support of that view.

323. And you would rather direct our attention to importations?—I think that is a point on which the Committee could help us most.

324. Carrying a little further the argument as regards the Channel Islands, what about Ireland? We have been hearing about Great Britain but not about Ireland?—No, the Board of Agriculture have nothing to do with the administration in Ireland.

325. Can you tell us whether they have had many outbreaks there?—No, it is something like 29 or 30 years since they had an outbreak in Ireland.

326. Have you ever considered whether there is any reason for that?—I think the risks we are exposed to by our proximity to the Continent are greater than would be the case in Ireland.

327. In this case, where you have certain articles which we have been talking about being imported into Great Britain, are these same articles not imported into Ireland?—I have no absolute information, but I should think that any trade like that in sheep's heads and offals did not exist in the case of Ireland. I should think the trade in calves in their skins did not exist; I do not know.

328. You consider that might be a possible reason why Ireland has been free from disease and we have not?—Given the transmission of disease by mediate contagion the chance is less in Ireland.

329. In the case of any of these suspicious articles being imported into Ireland, that would be a fairly good

reason for talking of the suspicion of the article?—It would be strong negative evidence.

330. Can you tell me whether our outbreaks have occurred merely on the pasture or in house feeding?—I could not make any general statement on that. The Somerset outbreak occurred on the pasture; the Chobham outbreak I think occurred in the sheds; the Hounslow outbreak occurred amongst pigs in the pigsty.

331. It is not very common for the disease to occur among animals that are being fed merely on pasture?—I do not think that has very much to do with it. It depends on how the infection gets there. The Sussex outbreak occurred in the sheds and on the marshes at the same time.

332. With regard to the straw used for packing, I believe that is largely used for wrapping in this country?—Possibly.

333. I think that it goes on from one merchant to another, and is used for every purpose. It seems to me not impossible—you might give me your opinion upon it—to issue a Regulation forbidding such straw to be used for any other purpose but packing. It always has a value for that purpose, and if you make it an offence to use such straw for any other purpose it would then require to be either sold or destroyed?—I can quite see making a Regulation, but I cannot see how you would enforce it.

334. Supposing a farmer gets it, it would be a dangerous thing for any merchant to let it go to a farmer?—But suppose the merchant puts it in his own stable where he has one or two horses, and it eventually goes out as manure. How could you enforce it?

335. Would it not at least tend to minimise the danger from that source?—I think advice of that kind, if it were issued, might be effective, but I do not myself like the idea of making a law, or what in effect would be a law—that is, an Order of the Board—where there is no chance of enforcing it effectively.

336. And your opinion is that a Regulation of that sort could not be carried out and would be of no use?—I think a caution to merchants might be of some use. In the same way we issue many cautions to agriculturists, but I must say they are very often forgotten.

337. I must say I do not see the impossibility of being able to check the infringement of a Regulation like that if it were carried out regularly, by a man using it regularly for his own horses. It seems to me a Regulation might be enforced?—You would have to find out who was receiving merchandise and inspect their premises.

338. Then as regards calves imported in their skins, you have stated that where an article was not likely to carry infection to a farm you perhaps hardly thought it was so necessary to be careful about that article, but it seems to me that these calves in their skins are handled by butchers, are they not?—Yes.

339. A butcher comes to the mart and handles the cattle that he is going to buy. It seems to me, if you consider it, that there is a direct link between the calf and its skin, and the cattle in the mart. Is not that so?—There is a possible connection.

340. It is a direct and almost certain connection it seems to me?

(*Mr. Field, M.P.*) But these cattle are killed immediately afterwards.

(*Mr. Morrison.*) He may come in and handle cattle which he does not buy.

(*Mr. Field, M.P.*) He would wash his hands before he came there.

341. (*Mr. Morrison.*) He might not buy any cattle?—In my opinion slaughtering is the most cleanly trade I have ever come across, there is more hot water and washing carried out in slaughtering than in any other trade that I have ever met.

342. The trade seemed to minimise the danger of the calves being skinned?—I only say I think you must have in view the danger of it being carried to home stock. Personally, I think in the case of the calf there may be a possible danger, but not a very great one.

343. With regard to the disinfection of ships, I suppose, if possible, it would be a good thing to have the holds disinfected which had carried such articles

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as hides, hogs, and so on, and that is your idea if that were possible?—Yes.

344. You mention that it would take such a time that it might be expensive and cause demurrage which would be a great inconvenience to trade?—It might be possible, but I have not gone into that. You might find that that was the case.

345. Supposing you use formalin and spread over the hold; it would not take very many minutes to go over a large portion of the ship, spreading it in that way. Would not that be an effective way of disinfecting the hold?—You have to consider how far that would be efficacious, and that is really a question rather more for Mr. Stockman than for me.

346. It would depend on the tenacity of life in the germ?—Yes, and we have been considering anthrax, which has the most tenacious life of all.

347. Still, when you were satisfied that that method of disinfection would be efficacious it would not take very long to do?—It might not.

348. As regards the milk contracts, I am of opinion entirely that there is nothing in it, and as regards the matter of wilful importations of the disease, I do not think there is anything in it, but it has been suggested to me—and no one else has mentioned it—that cases where these outbreaks occurred were at dairy farms where they were running a contract at ruinous prices, owing to the dry summer. Perhaps you will be able to tell us whether that was the case or not. I mean, a man had a contract for supplying so much milk. He had no food for his cows, and the way out of it was as suggested. That is very far-fetched it seems to me, but that would be another reason?—That occurred in March before the dry summer. The Middlesex outbreak occurred on a pig-keeper's premises in July. It would not apply to this. The Sussex outbreak occurred in July, but principally amongst sheep on the pastures. It would not apply to that. The Derbyshire outbreak occurred on premises upon which there were one bull, thirty-one cows, and seven calves. I do not know what was the trade. I happened to be away when that occurred, but it does not sound like a case in point. The Somerset outbreak occurred in September. That did occur on a milk-seller's premises, and he had a milk contract in that particular case.

349. You are satisfied that was a most unlikely reason?—Most unlikely.

350. (Mr. Field, M.P.) You are of opinion that foot-and-mouth disease is not indigenous to this country at all; that is to say, it cannot arise spontaneously unless it is imported from a foreign country?—Certainly, as far as I am entitled to have an opinion on a professional point.

351. What we know as foot-and-mouth disease occurred previously to the importation of any of these foreign animals, or foreign fodder or food; in 1839 I think you said?—That is regarded as the first outbreak.

352. Of course this is only ancient history, and I only want to get at the principle. Have you any record of anything like foot-and-mouth disease having taken place in England before that date?—No; our earliest record is that the disease was introduced into this country in 1839.

353. I happened to know a farmer in Ireland many years ago; there were cases of it in Ireland long before that. However, I cannot substantiate that. Your theory is that foot-and-mouth disease is introduced into this country from foreign countries?—Yes.

354. By means of hides, fodder, hay and straw? Have you ever thought of the sea-birds' manure on the marshy places, because I know a gentleman, a veterinary surgeon, who is very strong on that? He says he believes the disease can be introduced. As a matter of fact, in your last report for 1911, it came from marsh land?—Yes.

355. Do you think the birds could bring over the disease in the shape of manure on their feet?—I personally think that a bird could conceivably carry the disease on its foot. Whether it could actually carry it in its manure is a point about which you had better ask Mr. Stockman.

356. (Mr. Lane-Fox, M.P.) They might bring it in

their feathers?—Oh, yes, in the feathers. I think Mr. Field meant that the manure might be infectious.

(Mr. Field, M.P.) As regards hides, I quite understand the danger of anthrax being introduced by the hides, and probably this Committee hardly realises what that means, because a good many men have died from anthrax through handling these hides when they came into contact with the flesh through a cut or anything of that kind. I do not know whether we are precluded by the terms of our reference, but I think we might make some recommendation with regard to anthrax.

(Chairman.) I think it is quite right that we should.

357. (Mr. Field, M.P.) And I suggest to the Committee, with the leave of the Chairman, that we should put in something about this anthrax. I do think that whenever hides come from a country where anthrax is prevalent we ought to seek the co-operation of the authorities of the country to have those hides disinfected, and also the wool of the sheep's skins before it is allowed to come here?—Yes.

358. Because anthrax is a much more dangerous disease than foot-and-mouth disease?—I am getting probably a little off the beaten track, but at the same time I think it is worthy of notice, because in the first place it is almost immediately fatal to the animal, and in the second place it is communicable to man. Therefore, I think as we are sitting with regard to foot-and-mouth disease, we ought to take some notice of anthrax. I hope the Chairman will agree with me, and not rule me out of order.

(Chairman.) All right.

359. (Mr. Field, M.P.) Now, with regard to packing-straw, has it come under your notice that a case occurred in the Isle of Man, a very peculiar case. They could not find out anything about it, although your inspectors made inquiries?—A case of what, sir?

360. A case of foot-and-mouth disease?—In the Isle of Man?

361. Yes.—What year?

362. Rather recently. I have not the date, but I will get it for you, and they found out nothing about it. At last, after the inquiry was over, this man, who was one of the principal men in the Island, found out from the people on the farm that the straw came in packing with some furniture, and was used for the cattle, and immediately after they had an outbreak of the disease?—I was not aware that there had been an outbreak of foot-and-mouth disease in the Isle of Man within recent years.

363. I was so informed the other day. Have you any jurisdiction in the Isle of Man. Of course, I do not know whether they are going to get Home Rule in the Isle of Man, but I am not aware whether your inspectors go to the Isle of Man or not?—No. Our inspectors do not go to the Isle of Man; we have no jurisdiction over the Isle of Man.

364. I will find out the facts?—I do not think a case of foot-and-mouth disease could have been in the Isle of Man during recent years without coming to the knowledge of the Board of Agriculture.

365. I would not put my knowledge against yours. With regard to the peat-moss litter. Have you thought whether peat-moss litter would be a means of introducing infection?—It is one of the possible means that have been suggested, but it has never seemed to me a very likely means when you consider the kind of place it comes from.

366. It is used for horses and cows from Germany a great deal; Germany is a hot-bed of the disease now, to a certain extent, and we ought to consider it. Peat is an antiseptic, and it ought not to carry disease, but it has been suggested to me by a very experienced man that the question ought to be considered by this Committee . . . ?—Is it not a fact that the peat for this purpose does not come from the surface of the soil, but from the lower soil? The chance that it will be infected, I should have thought, was very small.

367. It depends upon the kind of bog it is taken from. With regard to sheep's heads, trotters of calves and skins in Ireland, we never import any of those at all. There may be a few calves imported, but that avenue of inducing disease does not exist in Ireland at

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all. I suppose that is one of the reasons why we have been free of the disease in Ireland for 29 years?—I think it might be a possible reason.

368. I said one of them?—Yes.

369. As to the disease in Ireland at that time, I remember it well because we had tremendous inconvenience in the trade. We had to get the cattle and sheep all inspected; we were only allowed to keep them so many days and put them on a certain field and all that kind of thing. However, the disease was got rid of by means of those regulations without slaughtering the cattle, so that I agree with you it can be stopped without slaughtering. I also coincide with you that slaughtering is the proper way when you get hold of the centre of the disease at once and stop it almost immediately. There is just a point with regard to foreign Governments. I have often thought of it, long before this Committee was appointed. Could any arrangement be made to get foreign Governments to co-operate with our Board of Agriculture in respect of giving notice immediately one of these serious outbreaks of disease occurs? Because if the human health is to be safeguarded in that manner—of course you cannot put the human race in comparison with cattle—I do think that some safeguard of that kind could be introduced in France, Germany, Denmark, and all those other countries with whom we are in friendship. I think we ought to have some co-operation with them?—We get regularly the disease-returns from the foreign Governments; they come in generally once a month. We know what the condition as regards disease is, broadly speaking, in the foreign countries, and in the case of a country like America, where they are importing animals for slaughter, we have a definite arrangement now with the American Government and the Canadian Government that they will inform the Board at once of an outbreak.

370. Does that hold with the European Governments; have you the same arrangement?—No; in effect we do know as regards the countries where the disease has not been prevalent. We got immediate information of the least outbreak in Sweden, for instance, within a few days of the outbreak. We arrange with His Majesty's representatives in those countries that in the event of a country having been free of disease for some time, if the disease appears there they should telegraph to us at once in order that we may put in operation the Foreign Hay and Straw Order or other restrictions; but as regards a country where the disease has gone on practically continuously, we rely on the monthly returns that come in. We make arrangements to get them at the earliest possible date. I think now we shall be able to get them more regularly than we have done.

371. I do not know whether I am of sufficient importance to make a suggestion of that kind, but I do think that there should be some kind of official co-operation between the Board of Agriculture and the Offices of Agriculture in the various countries, because obviously it would be a general advantage that we should act together in a matter of this kind. Whether anything further could be done in that direction or not, it is not for me to say?—I do not think there would be much advantage in getting more frequent returns from the countries in which the disease is prevalent than at present, because we can take no further steps.

372. Could not the Governments themselves arrange with you not to import hay and straw from those countries, or anything that you thought would help the disease from being imported, an amicable arrangement with them?—In that case we have got nothing to bargain with if we are not taking animals from that particular country. As a matter of fact, we did draw the attention of the French Government to the point at the time when France was practically clear from foot-and-mouth disease. They then raised the question of whether we could not admit French animals into this country in accordance with Section 25 of the Act. The Board went into the question of their laws and their organisation and many other things, and said that in order to satisfy them that under the Act they could safely import cattle from France, they should make similar laws in France with regard to importation of hay and straw. As a matter of fact the French

Government found themselves unable to do so. That is the only case in point.

373. It is because we are a free import country, and we have nothing to bargain for, I suppose. Your case of 1908 proves to me at least that the hay in Edinburgh undoubtedly transmitted the disease to the cattle there?—That is certainly our belief.

374. Well, it is mine, too. Scotland is not as good as we are, because they had no outbreak for 15 years, and we have had no outbreak for 29 years, which is nearly twice as long. I understand that the 1896 Act prohibits animals for slaughter from countries where foot-and-mouth disease prevails. We are acting up to that?—That prevents an animal being imported into this country otherwise than for slaughter except in the exceptional circumstances mentioned in Section 27 of the Act.

375. How many countries now are free to admit live cattle to be killed on landing?—Only the United States of America and Canada.

376. Only those two; all the rest are more or less diseased?—All the countries from which there would be any trade.

377. That is a serious state of things. Now, with regard to the management of ships and having ships disinfected, and the vehicles, which is a suggestion I think you make to safeguard us in the future, would you prefer what I think is the most practicable way, to refer that to the Board of Trade probably and the Home Office to give us a report on it, and see whether that could not be carried out, because if you had the co-operation of those people I do not think it would dislocate trade much; it might cause a certain amount of delay in certain cases, but I do not think it would interfere very much with trade?—I agree you ought to look at the question from the wider point of view than merely foot-and-mouth disease, because, as I said, the question of human plague comes in and that of human anthrax.

378. Human anthrax in my opinion is more important than the other. I had some other questions to ask, but they were all anticipated, and it is no use delaying the Committee by repeating questions which have already been answered. But I wanted to know whether you have any suggestion to make to this Committee, any definite practicable suggestion which you could put before us that we could put into our report in order further to safeguard this country from foot-and-mouth disease and from anthrax?—No, I do not think I have. I have suggested certain lines of inquiry for the Committee which in my judgment they might profitably follow, but I have no information to lead me to come to any definite opinion on any of these subjects yet.

379. My last question is, do you agree with me that in considering and reporting on this question we ought also to take into consideration the question of preventing the introduction of anthrax into this country, which in my opinion is as important as foot-and-mouth disease?—I have said that, to my mind, any information you get with regard to foot-and-mouth disease will be very useful to the Department in connection with anthrax. It would be useful, in my opinion, if the Committee keep the point of anthrax in mind in making any inquiries with regard to foot-and-mouth disease.

380. (Chairman.) There are just one or two things I want to ask before we adjourn. They are rather on the point which Mr. Field has made on which I asked you a question in the later part of your evidence; it is about these foreign countries. I think you said that you have no knowledge of what the regulations are in foreign countries for stamping out these diseases?—I meant to convey that I was not prepared to give off-hand the information. The Board of Agriculture, in their Intelligence Division, have the information, but I did not come prepared with that.

381. If we call Mr. Rogers, we could get it?—Mr. Rogers, or one of Mr. Middleton's division.

382. If we ask them to come and give evidence they would be able to tell us what the regulations are which foreign countries adopt to stop the disease in

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each country?—Yes, and I think Mr. Stockman has a lot of information on that.

383. If Mr. Stockman has it, we can get it from him to-morrow, but in my judgment—I am only speaking for myself—I look upon this as one of the most important parts of the whole inquiry, because as long as the disease is rampant in Europe—I am not talking about the Argentine or America—to my mind, we are always liable to an outbreak of disease in this country, and therefore, my question to you, and it has been put by Mr. Field also, was this, whether some arrangement, some friendly arrangement with the Boards of Agriculture of foreign countries could not be come to by our own Board of Agriculture to take common action against these diseases, both foot-and-mouth disease and anthrax? I know your point that we may have to give something; they will ask us to give something at the same time, but that is a matter for consideration afterwards?—Of course, you have to ascertain their laws; you have also to get information as to the administration of the laws, which is more important than the laws themselves, and in my opinion you will find all the principal countries in Europe are as keen and anxious to suppress foot-and-mouth disease as we, and really do everything in their power to bring that about. I would not like to say so much about Russia, but that is true of all the adjacent European countries. I am quite certain you will find that the laws, for instance, of Germany, on paper, are good laws, but I do not know much as to the administration of them. I am not prepared to be cross-examined on the point.

384. But their regulations, be they good or bad, cannot be very much use when we see the state of Europe at the present time—

385. (Mr. Field, M.P.) May I just ask one question? Do you know whether they have a Slaughtering Order in those countries or not?—I could not say off-hand.

386. (Chairman.) There is one other question I want to ask, which Mr. Nunneley and Mr. Bathurst alluded to; it is the question of the hay and straw for packing purposes. I have a strong impression too that that has a great deal to do with it. There is a great fear of infection from that too. In Ireland, for this hay and straw have they any prohibition?—They had an Order similar to our Order.

387. For feeding, but have they any prohibition for hay and straw for packing?—I think, speaking from recollection, the Order follows the lines of ours.

388. In Ireland?—I would suggest that you should get a copy of the Irish Order.

389. There is a certain amount comes into Ireland for packing?—I should imagine so.

390. Anyhow, they have the same Order as we have in this country?—As far as I recollect their Order, it follows precisely the line of ours, and was made after ours.

(Mr. Field, M.P.) That is right; quite the same.

391. (Chairman.) Only one word more. Alluding to what Mr. Bathurst said about the size of the zone, I take it to be the view of the Board that they never wish, as a general rule, to have the zone less than of

15 miles radius in the presence of an outbreak. That is the view of the Board, I take it, from your past experience?—As regards that, the 15-mile radius, I believe, was first of all adopted as the radius in which cattle are likely to be moved about locally, on the assumption that you might not have got the actual centre of the disease. Supposing the case of a local animal, an animal going by road, it would not be likely to have been moved more than 15 miles. That was set up as a rule, and it has often been pressed upon us that it should be reduced, and as a matter of fact in the Derbyshire outbreak the area was rather smaller than usual; but I have always argued, as I have already mentioned, that if you once begin to tamper with regulations which you know to be effective you will almost certainly be pressed to go on, and you may modify them so far that you may find that they prove a failure. Personally, I am not prepared to make any recommendation in that direction.

392. (Mr. Bathurst, M.P.) Surely that must depend on the situation, character, and proximity of the market of the district?—Yes, but at the moment when we make that Order we know little or nothing about the circumstances. On several occasions we have reduced the outer zone and not maintained the 15 miles for the whole period when we knew the whole of the facts. That was certainly the case in the Ripon district of Yorkshire, but we did not maintain the 15-mile limit for the whole period there, because we discovered from the physical characteristics of the country that the Order applied to a certain part of the country in the North and West Ridings which was divided from Ripon by hills and mountains and so on, and there was no actual need for restrictions between those two parts of the scheduled area.

393. You do take into account the local conditions?—Certainly we do; we do not always maintain the 15 miles for the whole time. But my point is that we must have something definite to go upon, and the basis of a 15-mile area has been taken, and personally I am not prepared to advise that it should be altered.

394. You do not feel hidebound by the particular area just because in a general way it would appear to be a suitable limit?—No. If you take the Edinburgh outbreak, although we had a 15-mile area we did not take in the country across the Firth of Forth. We regarded the Firth of Forth as a seaboard, and we did not include any part of Fife in the area on that occasion.

395. May I put a case in point? The nearest local market to me is provided with cattle from a much more limited area than 15 miles, whereas the most important market for my constituents—Salisbury—is fed from a considerably larger area?—Yes.

396. It appeared to be strong evidence in favour of adapting regulations as far as possible to individual cases?—I hope we always do that, but we must start by rule of thumb. We know practically nothing but that the disease has broken out in a certain place, and we must act within 12 hours.

397. (Mr. Field, M.P.) It is not a cast-iron rule?—No.

The Witness withdrew.

Friday, 26th January 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (Chairman), presiding.

Sir CHARLES D. ROSE, Bart., M.P.
Sir HARRY VERNEY, Bart., M.P.
Sir J. BOWEN BOWEN-JONES, Bart.
Mr. CHARLES BATHURST, M.P.
Mr. WILLIAM FIELD, M.P.
Mr. JOHN HINDS, M.P.

Mr. GEORGE R. LANE-FOX, M.P.
Mr. RICHARDSON CARR.
Major E. MARTEN DUNNE.
Mr. E. E. MORRISON.
Mr. E. M. NUNNELEY.

Mr. W. H. F. LANDON (Secretary).

Mr. S. STOCKMAN, M.R.C.V.S., Chief Veterinary Officer, Board of Agriculture and Fisheries, called in and examined.

398. (Chairman.) You are the Chief Veterinary Officer to the Board of Agriculture?—Yes.

399. For how long have you been that?—Since the beginning of 1905.

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400. And you were then Principal Veterinary Officer to the Transvaal, were you not?—Yes, before that.

401. And you were appointed 1905?—In 1905. As a matter of fact, I was appointed in 1904 out there by cable, but the Transvaal Government asked particularly that I might stay to finish a stamping-out job that I had taken a great interest in.

402. And when you were at Pretoria you had great experience of diseases of all kinds, I take it?—Yes, but not of foot-and-mouth disease. The authorities were lucky enough to deal very radically with some affected cargoes that came from the Argentine. They just simply turned the ship away, and told them to go where they liked; they were not to come there. But before that I had some considerable experience in India, where you do get foot-and-mouth disease, and where on account of the native religion and native prejudice it is almost hopeless to expect to deal with it. That, of course, is a lesson in itself. It opens your eyes to a great many things in connection with administration and the way the disease may run about.

403. In your précis which you have given to the Committee you propose to take seven different points. I see that first of all you propose to deal with the animals susceptible to foot-and-mouth disease and the variations of susceptibility displayed by some of them?—Yes.

404. Now, will you give us your evidence on that point in your own way?—Perhaps, in the first instance, I might give a very short description of the characters of foot-and-mouth disease, because I have no doubt they will have to be referred to afterwards, and really, I think, perhaps, that should have been No. 1 on my list of headings. Well, it is a contagious eruptive fever caused by what is known as a filtrable virus. Filtrable virus is used to describe the class of disease-producing material that is capable of passing through the pores of bacteriological filters; for instance, anthrax is not a filtrable virus, and if you mix a fluid, let us say some broth or water, with anthrax bacilli and foot-and-mouth disease virus, and then pass this through one of these filters, you would not produce anthrax with the filtrate, but you would produce foot-and-mouth disease if you inoculated it to an animal. That shows, of course, that the virus of foot-and-mouth disease has passed through, and it probably means that the filtrable virus is very small, and that its small size enables it to pass through the pores of the filter. Without discussing in general filtrable viruses, I might say that whether a virus is filtrable or not does not depend entirely on the size of the microbe, and it is possible that in time, with improved methods, we may be able to see this filtrable virus of foot-and-mouth disease. As regards the animals susceptible, it may be said that practically all the domestic animals and wild ruminants can be infected with foot-and-mouth disease. This statement, however, requires a certain amount of qualification. Bovine animals are usually looked upon as more susceptible to the disease than sheep, pigs, or goats, but the experience in Great Britain during the last few years—I refer to the time since I came here and have had further opportunities of observing the disease in this country—has been that, given an outbreak amongst pigs or sheep, the disease spreads as rapidly as it does in cattle. I really have been able to draw no distinction once the disease got a footing, and I might add on this point, a pathological point, that it is known that by passing the virus through a series of pigs you can exalt its virulence. If a weak virus, for instance, is passed through a pig and then passed through other pigs, it increases the activity of the virus. Human beings may also contract foot-and-mouth disease, though they are not in the first line of susceptibility. Horses, dogs, and cats, have occasionally been known to contract the disease under natural conditions, but owing to the resistance they show to inoculation with the virus, and to the infrequency of naturally contracted attacks of the disease amongst them, I think they must be considered much less susceptible to the disease than ruminants, especially cattle, pigs, and sheep. Lastly, under this head, I would like to point

out that the degree of susceptibility varies even amongst susceptible animals. I think we have to conclude that, because it has been observed pretty frequently, that certain animals appear to resist infection when their fellows are suffering from the disease. It is a very difficult thing to explain, but we have to accept the fact that in an outbreak certain animals, in an unaccountable way, do not take the disease whilst their fellows are suffering from it.

405. Have there been many outbreaks amongst horses?—No.

406. From your own experience?—I think it is exceptional. I have never seen it in a horse.

407. You have never seen it?—No; I am quoting from the writings of scientific men who have observed it, and it was principally by inoculation. What one does in the laboratory first of all is to establish what animals can contract it by natural or unnatural methods. Of course, pumping a large amount of virus into an animal is not a natural method, but to certain diseases some animals are insusceptible no matter how much virus you give them; but it has been shown that horses are susceptible if you give a considerable amount of virus. Then, as regards poultry: all attempts by what I would call the most reliable experimenters have failed to give poultry the disease, but there are on record outbreaks of disease amongst poultry. I have gone into these as far as I could, and I am not convinced that the poultry were suffering from foot-and-mouth disease. In fact, I am disinclined to believe that birds do contract the disease. It is not inoculable to birds. Many experiments have been done, and the evidence in support of natural outbreaks is not satisfactory. I think we may take it that for all practical purposes at least, and probably positively, birds do not contract foot-and-mouth disease.

408. Is that all on that first point?—That is all, I think, sir, as a basis for cross-examination. These are the only points I can think of.

409. Then, what about heading No. 2: The materials from affected animals which are infective?—The contents of the vesicles, and the lesions, are infective, and it follows that all materials contaminated thereby will be infective also.

410. (*Mr. Bathurst, M.P.*) The contents of the what?—The vesicles, the lesions. For instance, the saliva, dribbling from the mouth, is very infective, and that is no doubt on account of the contents of vesicles mixing with the lesions. The milk may be very infective. Hides, litter, and food stuffs may be contaminated, and the dung may be infective owing to the saliva which is swallowed and passed out with the faeces. That is practically all that one need say at the start as regards the directly infective material which you can take from the animal, with one addition, and that is, that in the early stages—the very early stages of the disease—it has been found occasionally that the blood is infective. The importance of that, of course, is in reference to the carcass, but it is only in the early stages that it has been found infective, and it is not always infective.

411. (*Chairman.*) I think, if you go through your different points, then I can cross-examine afterwards?—Very well.

412. That will be more satisfactory to the Committee. Then, the third head is: The virus of the disease and its characteristics?—Yes, the virus of the disease. All attempts to cultivate the virus artificially have so far failed. Until very recently the idea was that, so far as experimental evidence carried us, the virus of foot-and-mouth disease did not live very long—did not remain active very long. In addition, it was found that it is very easily destroyed by antiseptics, and by such natural processes of disinfection as desiccation and the action of sunlight. There can be no doubt, however, that under certain conditions which exist in nature, but which are not fully known, the virus may remain active for months, and be carried long distances. It is known in the laboratory that if you suck the virus up into capillary-tubes, seal those tubes, and keep them away from sunlight, it will remain active for several weeks. It is also known that if you filter it through a bacteriological filter so as to remove putrefactive germs, it will remain active for three or four

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months. Now these, of course, are not natural conditions, but to my mind the importance of the observations is this, that given artificial conditions which will preserve it, it justifies the suspicion that in nature there exist natural conditions under which the virus may retain its virulence for a considerable time, and our experience as regards outbreaks imported into this country makes that almost undeniable. It is destroyed at a comparatively low temperature. Heating for half an hour to a temperature of 55 degrees Centigrade, which is not a high temperature—it is what you might call a temperature of pasteurisation—will kill the virus, and it can be killed much more quickly by heating it to 70 degrees Centigrade. In fact, in ten minutes it can be killed under those conditions. Boiling destroys it almost immediately. There is just one other point, that a very small quantity of this virus—an active virus—is capable of infecting an animal. For instance, positive results have been obtained with as small a quantity as 1-250th of a drop; but, of course, there comes a point of dilution at which the virus is no longer likely to produce the disease. Then, as regards Heading No. 4: The methods of infection and spread, I am rather in a difficulty. Perhaps you would not mind giving me your ideas as to the extent to which I should go into that. Of course, I know what the Reference to the Committee was: The importation of disease; and if I deal with it purely in relation to the importation of disease, I must exclude the methods that obtain in an outbreak in this country. The same remark refers to dissemination. I was in that difficulty in preparing my précis; I put it down with the intention of asking the Committee just how far they would like me to go.

413. I think we should like you to speak freely on it.—To deal with it fully?

414. Certainly.—Really it applies more to the methods of dissemination. As regards infection, of course, we have the experimental methods which do not obtain in nature. If you inject the virus into the blood stream it is sure to give the disease. If you inject it deeply into the muscles it is also sure to give the disease; but these are unnatural methods. They are very useful in experiment, but they do not obtain in nature. The sub-cutaneous inoculation might obtain in nature, but that is a method that very frequently fails experimentally. If you inject a susceptible animal under the skin with the virus of foot-and-mouth disease you get a large percentage of failures. Probably the virus is destroyed at the seat of inoculation, but, whatever the reason of it is, everyone who has experimented with this method records a high percentage of failures. The meaning of that is that a scarification on the skin would not be liable to allow the virus to invade the body. But although that applies to the skin, it does not apply to mucous membranes. One of the surest ways of experimentally giving foot-and-mouth disease is to scarify the mucous membrane of the mouth or the genital organs, or the parts that are midway between the mucous membranes—the teats of the cow—and rub the virus on the scarifications. I think we may take it that in nature, under natural conditions, infection always takes place by ingestion. I can conceive, of course, a cow lying down on the infected litter and contaminating wounds on its teats, and I can conceive a man going to help a cow to calve with contaminated hands and infecting the mucous membrane of the cow's vagina, but I think in the majority of cases infection takes place through the mouth, and I might add that it is not certain that a wound in the mouth is necessary for infection, or even in the alimentary tract. If they swallow the virus they can take the disease; but, as the Committee will understand, an animal grazing or eating almost any forage you like to give it is liable to wound its mouth, and that, of course, would help on infection. The summing up of that then is that infection by the alimentary tract is practically the method of infection. Now, as regards the methods by which the disease may be disseminated, including the theoretical risk attaching to certain imports, and the possible degrees of danger connected therewith, I would point out that infection is spread from animal to animal by co-habitation in the stables, on the pastures, by the

hands of milkers, or by the boots or clothes of attendants; it may be carried considerable distances on foodstuffs, and through a water supply being contaminated. When an animal is salivating, the threads of saliva and the straws contaminated thereby may be blown a comparatively long way by the wind, and thus reach other animals or a watercourse from which they drink. I pointed out earlier that you could dilute the virus beyond the dangerous stage. It is a very common thing to say that a water supply may be contaminated, and it is often very difficult to explain why a water supply has not become contaminated, if it is true that a water supply is easily contaminated. In some of the outbreaks in Somerset, where there was a very high wind blowing and a great deal of water going down the field-channels, we could see the saliva blowing up in the air by itself—it is very viscous—and travelling a considerable distance. It goes out of sight—I do not think it goes more than 100 yards or so—and I should think it quite impossible, for instance, that even this viscous saliva could blow over from France. It can blow over two or three fields—there is no doubt about that—and can contaminate other animals. The dangerous thing about a stream is that the contaminated straws in dry weather get blown up into the air; they go all over the place and they may drop into a stream, and it may just happen that some unfortunate animal takes in the virus. That is putting two and two together, and that is how I am inclined to explain the contamination of a running water supply. There were tons of water going down in one of these outbreaks, and I do not think it possible that pollution of the water alone with comparatively small quantities of virus could have done very much harm. Of course, there were many straws going down, and we saw straws blowing away from the infected field. Then as regards clothes: a good many observations have been made in Germany, and a good many have been made here, too. We know that a man, if he does not change his clothes, even if he washes, coming from foot-and-mouth cases, may carry the disease to another place. I believe it can be brought long distances; it could be brought from the Continent in that way. But the German observations went a good deal further than that. They went so far as to show, on evidence that I would not say was unsatisfactory, that people meeting with contaminated people might get their clothes contaminated with the virus of foot-and-mouth disease. They went so far as to say that prayer-meetings in the churches were a fruitful source of spreading foot-and-mouth disease, and according to the history of some of the outbreaks, it looked as if these people had met at a meeting and rubbed the virus on to each other. However, I cannot personally confirm this; but it is made on good authority. Of course, the roads along which affected animals have passed and the wagons in which they have travelled remain infective for some time. Rats, fowls, birds, cats, horses, and dogs, may act as mechanical carriers of infection, and the two latter animals have been known to contract the disease. I may say I have seen it in a dog myself, but, as I have already explained, the dog is a difficult animal to infect. As regards birds, I do not think there is any evidence that birds contract foot-and-mouth disease. I cannot deny. I do not wish to deny, because I think it is possible that they may contaminate their feet or their plumage and carry the virus long distances; but, of course, that would be a chance infection. What has been in my mind for a considerable time—it is a thing that one could only thresh out by experiment—is this: that it is quite possible that certain birds picking up the virus with pieces of food from a field, might infect their alimentary tracts, and the virus might even grow there for a bit, and in such cases they could carry it long distances, and excrete it in their faeces; that is merely a hypothesis such as an experimenter considers before he starts to experiment; he controls it by experiment; but it is a suggestion that I think must not be thrown aside. Then it is also conceivable that human beings affected with the disease might convey it to animals. That is a point which has not been taken up by very many men who discuss and write on the subject,

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but I think that is a very possible means of spreading the disease. I may say this, however: that in all the outbreaks that we have had recently, I have always inquired whether anybody had any eruption on the face or fingers. So far as inquiry and looking at a man will teach you, I could never find any evidence that it was so, that anyone had come there with foot-and-mouth disease; but in a bad outbreak I should think it is not improbable that the infection is sometimes carried away by men who are actually diseased.

415. (*Mr. Nunneley.*) Carried by the men having it themselves?—They have the eruptions, and they take the virus to and infect an animal. I think that is very probable.

416. (*Chairman.*) That is under Head No. 5, is it not?—That is No. 5, without going into the special materials which may carry the disease. As regards the latter I wrote a memorandum on it some time ago for the Department, and I think Mr. Anstruther gave you simply the headings of it.

417. Yes, that is so?—Of course, I want to avoid repeating what he said, but, as far as I could make out from him, he simply mentioned the materials without discussing them.

418. That is so?—Well, if you would like me to do so, I will go a little further and discuss them.

419. The different articles?—The different articles that I think are dangerous, as if one were going to classify them.

420. Quite so?—Well, at present I will not discuss affected animals. Of course, everyone knows that disease can be introduced by affected animals. It must be admitted that the virus of foot-and-mouth disease can be carried long distances on inert material such as food stuffs, packing material, clothing, offal, &c., and, as I pointed out, it might be carried by birds. That being so, it seems almost impossible to expect absolute protection against invasion under all circumstances. It appears to me like asking to be protected from the hand of God, as it were, but at the same time one can classify the degrees of danger. Some things are probably more dangerous than others, and I take it that what the Committee wants to get out of me, as far as I can help them, is the amount of protection from indirect invasion which can reasonably be expected under the economic conditions obtaining in this country. Viewing the question professionally, I would place first the possession of a well thought-out plan for dealing with the disease at the moment it is discovered, and a competent staff to carry out that plan. That I think is really the first line of defence. I place the other second, the protective measures which might be taken to prevent the virus being introduced, because it seems impracticable and even impossible to erect any impregnable bulwark. In trying to classify these articles according to their dangerous characters, I would like to point out that it is enormously difficult to draw up such a schedule for several reasons which I might put, as I have put them here, under headings (a), (b), and (c). Dealing with (a), the evidence against any particular article is purely circumstantial, although sometimes strongly so. That is one difficulty. Then (b), certain materials which may be excellent vehicles for the conveyance of the virus of foot-and-mouth disease are not likely to be brought in contact with susceptible animals; (c) to determine the risk connected with each class of article by experimental investigation into the question of indirect carriers of infection seems to me rather hopeless, as it would be like looking for a needle in a haystack to experimentally search for the virus of the disease in the various imported articles which have come under suspicion. Further, the experiments would have to be carried out on an isolated island to avoid all chance of starting an outbreak in the event of a positive result being obtained, and the disease spreading from the centre. I could say a good deal more about that just now, but I know that it has caused a good deal of discussion in the country, and I expect to be severely cross-examined about it, so I think I might leave it there, because from what I heard yesterday I expect that the subject will be exhaustively treated. There is one other thing, however, which I might

mention here, and that is this: that where we have to go by circumstantial evidence, the important thing is cumulative evidence. It is only by cumulative evidence that you can get strong proof or strong evidence against any particular article, but the trouble about that in the recent outbreaks which we have investigated has been that the circumstances were never the same in connection with each outbreak. If, for instance, we had had 10 or 12 outbreaks at the same time, all traceable to one material which had come in, of course, we could then have put our finger on something, but every outbreak has been different. Hay and straw I will take first. Affected animals on a farm often come in contact with hay and straw, and contaminate it, and these articles are often brought into direct contact with susceptible animals after importation. That refers mainly to what goes on abroad where cattle may be used for ploughing and in connection with hay-making, and I might add here for the transport of grain, because in some countries the diseased animals may actually walk through grain. The grain is piled up in heaps and the oxen may tramp over it, and I can quite well see good reasons for believing in the contamination of grain and hay and straw. The circumstantial evidence that hay and straw have brought the virus into this country is strong, and I would place hay and straw amongst the most dangerous articles. I should also place grain from certain countries amongst the dangerous articles. Now, I come to milk and similar products. I would place milk and cream from an infected farm in the first rank of articles likely to be infective. On the other hand, imported milk is not likely to reach calves, though it might get into the pigs' pail. I think Mr. Anstruther explained that the pigs' pail was one of my dreads in relation to foot-and-mouth disease. In fact material imported is used in hotels, and many pigs are fed from the refuse of hotels. On the other hand, I may say that I only know of one outbreak since 1908, since the time that I began to work at the disease here, which I could really say for certain began amongst pigs. In some of the others pigs were affected, but it was impossible to say that it had begun in the pigs. I think the bulk of the evidence was against it having begun in the pigs. But in one outbreak certainly it did begin in pigs. We have never traced milk in connection with an imported outbreak in this country. We have only to regard it as a dangerous possibility. As regards products such as milk and cheese, there are a few observations which show that the disease has been spread to human beings by milk and cheese. What we do not know, however, is what effect salting butter and maturing cheese has on the virus. I should think that it has a very marked destructive effect, but the cases referred to are very few, and they were mainly on farms where, of course, they might eat butter newly made from contaminated cream. They may also eat cheese that is pretty fresh. I do not think that you could argue from these cases that foot-and-mouth disease could be brought into this country in salted butter or in cheese, but there is a possibility of it. It is a thing which is open to experimental investigation. The next articles are hides and feet. Hides and feet from an infected country must be considered dangerous. They are not likely to come into contact with susceptible animals, but in transit they may contaminate other articles, such as railway trucks and feeding stuffs. I will now deal with carcasses. The carcasses of infected animals, whether the lesions have been removed or not, must I think be looked upon as dangerous. I would not, however, place imported carcasses in the first rank of dangerous articles.

421. (*Chairman.*) Imported what?—Imported carcasses. Then by request—Mr. Landon wrote to me about it—I have to say something about the danger of vaccine, seed-lymph. I have already included it as one of the dangerous articles. What I mean by vaccine, seed-lymph, is the material which is imported pretty frequently to prepare what you might call the anti-smallpox vaccine used to vaccinate children and human beings; but on that point I have prepared a special memorandum under No. 7. I would prefer to leave that just now.

423. I think we might leave that because it is rather

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outside the other evidence which you are giving. I think perhaps we had better take that separately altogether?—Yes.

424. There is nothing more you have to say on the first five points, is there?—That is practically the list of dangerous articles.

425. (*Mr. Bathurst, M.P.*) May I ask when you propose to deal with this vaccination question?

(*Chairman.*) I think we had better take that afterwards, it is rather a separate subject. We have to look into the different question of the different merits which Mr. Stockman has alluded to, and if we mix them up together we shall get perhaps a little fogged.

(*Mr. Field, M.P.*) We can take that up afterwards.

426. (*Chairman.*) I think so. Do you agree?—I thought what you wanted was the important points in a departmental report from the U.S.A. It consists of 29 very closely printed pages.

427. You mean the Department of Agriculture of the United States?—Yes, I have prepared a memorandum.

428. It is a very important one?—I have prepared a memorandum of four pages which I would read to save time, or I would hand it in if required.

429. (*Chairman.*) From the evidence you have given you consider foot-and-mouth disease from your past experience one of the most infectious diseases that you have to fight against, I take it?—Yes.

430. And it is one, I take it, which it is difficult to manage for the simple reason that it can be brought, as you have told us, by means of birds, or I presume by flies? It might in that way be brought from a diseased animal?—Well, I do not know how far a fly could carry it, but since you mention flies, I may say I really should have taken that up. The fly has much engaged the attention lately of hygienists, and it has been found that with regard to anthrax, for instance, if you feed a fly on material infected with anthrax it goes on excreting anthrax infected material for days, even for weeks, and it is quite possible that a fly might be contaminated in another country, come over with cargo and infect it. No experiments have been done to show whether the virus of foot-and-mouth disease grows in, or passes through the intestines of flies and makes them infected for some time, but I think it is a possibility that one really ought to take into account; and we know, of course, that cargoes are swarming with flies sometimes.

431. Then it can be brought by human beings I gather?—It could be brought by human beings.

432. By human beings from one place to another?—Yes.

433. It can be air-borne?—To a certain extent it can be air-borne.

434. Up to a certain distance?—It is a contaminated solid that is carried by the air. There is no gas or anything of that kind.

435. It is what we call air-borne; that is the proper expression?—That is the proper expression.

436. Do you think it is probable on that point that the last outbreak in Somerset was air-borne, or these other places in the same vicinity?—I think not.

437. It was too far?—It was too far and the interval was too long.

438. Too long?—Yes.

439. I want to ask you a question which I asked Mr. Anstruther yesterday. Do you think it is possible that this disease, this bacillus, has ever really been stamped out in this country?—I think that is undoubted.

440. It has been?—Yes, I have carefully gone into that as regards the outbreaks since 1908. I must admit, of course, that the two opinions are admissible, that there is room for debate on the subject. At the time I reckoned it up we had had seven outbreaks; I think we have now had nine initial outbreaks. All these were imported. Of course, we do not always confine the disease to one premises, but my view of the matter is that these initial outbreaks from 1908 on to now were all imported. The outbreaks that occurred at distinct intervals were imported separately. I do not think that any one had any connection with the other.

441. Then, going to the question of the imports, you

have told us some of the most dangerous ones, and amongst them are hay and straw, and we had a good deal of evidence yesterday about the hay and straw which is brought in for packing. Well now, do you think that there is danger in the hay and straw which comes over with the packing, that there is danger of bringing disease in that way?—I think we must admit it, sir.

442. You do?—Of course, it is a question to what extent it comes in contact with animals after it arrives.

443. I think it is well known that the majority of this packing, I expect, is used in yards and in manure afterwards?—Yes.

444. If that is the case there is a risk of it spreading?—Oh, there is a risk which must be admitted. On the other hand, we did not manage to trace any of the outbreaks to it.

445. Have you known of any case of outbreak which has been due to hay and straw used for packing? Have you any suspicion of anything of the kind occurring?—In this country?

446. Yes?—No.

447. You have not?—Well, up in Yorkshire in the Ripon outbreak there was a story—the facts were correct up to a certain point—that a school-treat had been held on the farm, and the children had all been given toys which were packed in material from Austria, and we followed that up, of course, but my recollection is that they were found not to have been packed in straw; I think they were packed in shavings. But Mr. Smart was on the spot, and will be able to speak more definitely. They were not packed in straw; that is my recollection. The story came to hand after my visit.

448. With that single exception you know of no case?—I know of no case. Of course, you must remember this, that we get so little definite evidence to guide us, that we beat the faintest clue to death; the smallest clue we get we beat to death, and the public often hear what we are inquiring into, and they go so far often as to say that the Board of Agriculture have found that so-and-so was the case, when it is not so; when we have got no positive evidence.

449. What I want chiefly to get from you is about these different things which may bring in the disease?—Yes.

450. Now, you have mentioned oats?—Yes.

451. Foreign oats. I presume you mean Russian oats?—Well, when I said grain, I did not mean oats so much as Indian corn.

452. Indian corn?—Maize.

453. Well, what about Indian corn. Have you any knowledge or any suspicion of that having brought the disease?—Of course, it is circumstantial evidence, and, as I say, we beat every clue we get to death; but when I went down to the last Somerset outbreak I found that it had occurred in a field where the man fed his chickens. The cattle were running in that field, and I also found that he fed them with chicken food which was imported maize, and on following it up the inspectors found that it came into Bristol, and it had come from the Danube where the disease exists. I have been there myself in the course of travelling and I know the way things go on. They sometimes use oxen to pull the grain down.

454. (*Mr. Field, M.P.*) Did the cattle feed on that field or a portion of it?—If you have a heap of maize and a lot of cattle come along no one can stop them from taking a mouthful. They can slobber over it and they can walk through it often, or they could drip on to some of the bags, if it was in bags, but I know at those ports—I have travelled on grain ships—a great deal of the grain is not put into bags at all. Of course in “tramps” they used simply to put in partitions and load them up.

455. (*Chairman.*) Was this maize in Somerset, do you say?—This was the last outbreak, the isolated outbreak at Yeovil. I would not like to say that that is proof positive that the maize brought it in, but that is the only clue that we could get.

456. Well now, about Russian oats, foreign oats, you know some millions of quarters come into this country from abroad. Have you any knowledge of

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any outbreak through them being used?—Not of foot-and-mouth disease.

457. Of anthrax?—Anthrax, certainly.

458. You have?—Oh, absolutely proved. The proof leaves no doubt about it in the case of anthrax; you can put your finger on it. But foot-and-mouth disease is another matter. Not only have we traced cargoes and found anthrax in stables amongst horses following a cargo, but it has been possible to get a growth of the anthrax bacillus from samples of oats brought in in that way; and I believe the Army lately have had a good many cases in horses of anthrax from oats. It could only be brought in in the oats, and they admit that the oats brought it in.

459. Russian oats, or some foreign oats?—Yes, Russian oats principally.

460. That is the big majority with them, I take it?—Yes, I imagine so.

461. But, as regards foot-and-mouth disease, you have no knowledge of anything?—I have no definite knowledge. I should think, having regard to the fact that oats are used more largely by horses, you do not get much evidence about them as regards carrying foot-and-mouth disease.

462. Well now, what about imported fodder?—Hay?

463. Coming in bags as it does. I will tell you why I ask you, because there was a letter from a gentleman; a correspondent sent it to the Committee and said that he had bought British fodder, but it was put into imported bags, bags which had come over, and I understand from him that an outbreak took place some years ago, and it was thought then that it was from these imported bags—these foreign bags which had had fodder put into them?—An outbreak of foot-and-mouth disease?

464. Yes.—Theoretically, of course, I should think that is possible. As regards a bag it is an awfully difficult matter, as anyone will understand, to form a definite opinion on that. Suppose a bag gets contaminated with foot-and-mouth disease virus and then gets emptied, of course, it might carry the disease to the farm to which it is taken, but then it might be months before that bag is used again. I think it is unlikely that that bag goes on disseminating it to any extent; but theoretically I would admit that it is quite possible that a contaminated bag could bring it on to a farm, just as contaminated clothes could bring it.

465. Now, there are three or four other communications. One is from a gentleman who says that there were certain animals a few months ago washed up on the shore, and owing to the coastguards not patrolling the coast like they used to, these carcasses were left on the shore for some days, and it was thought that that possibly might be a cause of the contagion. Do you think that is likely?—I do not think that is likely.

466. Would not the salt water when these animals are thrown overboard—supposing they were diseased—have taken away all chance of infection?—Well, the virus is very easily destroyed, and a strong solution of salt does destroy it, but, even without that, I think putrefaction would have done away with all the risk.

467. I ask you these questions just to get your answers in evidence so that people may know that these things are inquired into?—I do not think that there is anything in it.

468. Then there is another gentleman from Devon who writes saying that he thinks disease is due to allowing the arable land to go down to grass. Now, do you think there is anything in that?—I should think not. Is he not suggesting spontaneous generation?

469. Well, I cannot understand it, but I thought I should just like to ask you the question.—I do not see how that could originate foot-and-mouth disease.

470. I do not quite know what he is driving at; I think we might leave that?—Does he not mean that owing to the amount of grazing and fatting of animals, more food is imported?

471. I cannot tell you, Mr. Stockman, but that is one of the letters.—I can see no connection; he would have to explain it further before I could see.

472. Well then, there is one other and that is from Taunton. He suggests that the Bridgwater outbreak

was due to the cleaning out of ditches. They were last cleaned out about 35 years ago, when the disease was last prevalent, and he puts down this last outbreak in Somerset to that now?—Well, of course, it is a fact that the ditches were being cleaned out when I went down to confirm the diagnosis; round the field that the diseased animals were in they were cleaning out the ditches. It comes to be a question of *post hoc ergo propter hoc*. The disease had been on the farm 30 years before. I do not know any virus of any disease which has been known to live for 30 years.

473. (Mr. Nunneley.) Does not anthrax?—Oh, not 30 years. And I do not think there is anything in it. I think it was a case of looking for a cause for it, and failing to find an evident cause, accepting practically anything. But other ditches were cleaned out at the same time, other ditches which had been exposed 30 years ago to infection, and nothing followed. I may say that at the Chobham outbreak they had pulled down a thatch 40 years old, a thatch on a farm where diseased animals had been, and they rubbed it into us locally that that was the cause of the outbreak. Of course, these are exaggerated cases; I do not think you could accept them.

474. (Chairman.) Now, Mr. Stockman, I presume you were sent down first of all to all these outbreaks; in 1911 you went down?—I make a point of going in the first instance to every outbreak to satisfy myself about the diagnosis, and I generally like to have two or three hours or more there to see the lie of the land for cutting out and slaughtering operations, because it is very difficult to sit up in the office and read and advise on a report on a case; if you see the lie of the land you will have a far better idea of what the officer on the spot is proposing to you.

475. I do not want to go through all these cases with you. You heard Mr. Anstruther's evidence yesterday; have you anything to say in addition to what he said as regards these different outbreaks at all?—No, I do not think so; you see he was practically giving the Board's evidence, so far as administration is concerned.

476. Yes, but from a veterinary point of view you have got no other clue at all, except in the one or two cases which you have mentioned, of how these outbreaks occurred?—No; I think he mentioned the story about the French dealers coming to Rye.

477. Yes.—I was not here at the time he mentioned that. No, I have nothing else to add to it.

478. Well, that brings me to another question. Of course, you have been telling us this morning of different things which might bring in infection and that kind of thing, but is not the chief thing to find out where the seat of the disease is?—At home?

479. No; where it comes from?—Yes, I quite agree with that.

480. Very well, that being the case, am I not right in saying that the seat of the disease is the Continent of Europe?—Well, until lately I thought so, but I am not prepared to say that it does not also come from the Argentine. Now that I have evidence that satisfies me that the virus can remain in material for a considerable time, I am not satisfied that some of these outbreaks have not come from a further distance than the Continent. For instance, in the Ripon outbreak, if there was anything in importation theory, the suspicion was against material from the River Plate—grain and so forth—we have no definite evidence, we only know that the stuff did come, but I would agree that the Continent of Europe is the most dangerous place; it is the place that really matters.

481. That is really what I want to get out from you; I will leave the Argentine for the present. I unfortunately did not bring my Board of Agriculture Journal down this morning, but looking at that Journal for the 1st January 1912, if you look through all these different countries in Europe: I will take, for instance, France; France, I see by your return, had 14,115 "étables" in 2,748 "communes" of disease. That is foot-and-mouth disease and anthrax, while in Germany there were 15,456 infected places—foot-and-mouth disease this was—in 4,962 parishes. Then I go to Russia, and I find anthrax and foot-and-mouth disease; there were 422,045 cases in 5,635

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"communes." Well, that shows that it is absolutely rampant in Europe, does it not?—Yes.

482. Would it be your opinion—I ask you exactly the same question as I did Mr. Anstruther—that it would be advisable, as we know it to be the seat of this disease, that some common action should be taken by all foreign countries with our own?—I think so. I think that very strongly; but of course the Continental authorities for many years looked upon this country as knowing nothing about animal diseases. I have always held a very different opinion. As regards manipulating them, I really believe, as far as my experience goes, that the stamping out of disease is an Anglo-Saxon quality. There is no country, barring Denmark, which has copied us, the United States, which has copied us, and which we may take as an Anglo-Saxon country, and our own Colonies, which have been able to stamp out these diseases, because of this I am inclined to say it is an Anglo-Saxon quality. France is now beginning to follow suit. They had to pass a special Act through Parliament to enable action to be taken. Holland has been following our methods, and although they are not really in such a good position as we are to carry them out, they have made tremendous progress, and if you follow these returns, you will find that countries which are following, what I perhaps insularly call, the British methods, are the countries that are really doing something and making some progress against the disease. But I do not know that they would altogether receive advice on these things from us, and until they are ripe for making the suggestion themselves, I do not know that they would take the suggestion very kindly.

483. Am I not right in thinking that, as long as Europe is in this state, we are always liable, whatever steps we may take in this country, to outbreaks from time to time?—Yes.

484. Of course, if there was common action taken by all countries in Europe with ourselves, it is just as much to their advantage as it would be to ours, exactly?—Yes; but it is the obstinate man who stands out and spoils action of this kind.

485. I am afraid you did not get very much sleep last night; you were getting out a lot of returns, I hear; can you give us any knowledge of the regulations in some of these foreign countries; I do not want to go into them all; as regards foot-and-mouth disease; take Germany, for instance?—I would like to say about this that I tried to get all the papers, and I am very glad that they did not give them all to me; I could not possibly have got through them; they kept me till about two o'clock in the morning. I do not suggest that I can give you chapter and verse, but I read through several and refreshed my memory on them. The laws, taken on the whole, are pretty much like our own, but their administration, their plan of carrying them out, which to my mind is the whole thing, is very different.

486. Very slack?—No, I would not call it slack.

487. Oh, very different, I beg your pardon?—I may say now in Germany the law is rather difficult to find your way about in, because it does not run like ours. It lays down a lot of general laws which apply to every disease, and then it lays down a few specific laws for each disease, and if you simply read, without knowing of the general things, the Regulations in connection with foot-and-mouth disease and glanders and so forth, you would think they amounted to nothing, but with the general laws, they amount practically to what our own are, except that the way of carrying them out is different, and, as I say, that is important. Well now, they have to report, and I think they are better than we are in this respect, because not only has the owner to report, as he has here, but the veterinary attendant has to report. Well, he has to do that here by Order now; we introduced an Order compelling that about a year ago; but a slaughterer, a knacker, a meat inspector, practically every man who handles or deals in animals in any way is bound by the German Statute, and under penalty to report disease.

488. (Mr. Richardson Carr.) In a carcass?—Yes.

489. Any sort of disease?—I mean a scheduled disease. They give a schedule which is practically the same as ours with a few added. They define a diseased animal as an animal showing symptoms of a contagious disease, and they define a suspected animal as an animal which does not show such symptoms, but which it is supposed has received contagious matter. Now, of course, one man might interpret that in one way, and another in another. To my mind it might prevent one of the most important actions in dealing with foot-and-mouth diseased animals, namely the killing of animals that had only probably been exposed to infection. I do not know to what extent that is so; it would take a legal man to tell you what the meaning of it is, but if we think that there is danger of the disease spreading to any animal over here, we can take him and kill him. I do not see any authority for that in the German law, and that to my mind is a crucial point.

490. (Mr. Field, M.P.) As a matter of fact, do they kill animals that are in contact, do you know?—They will some of them. But as regards foot-and-mouth disease in Germany, it has come often like a sweep, it has swept rapidly over the country, and if they did not kill under the circumstances, one could not blame them. On the other hand, they have never given the value to slaughter that we have; at least I am expressing my own personal opinion that none of the Continental people have given the same value that we have to it. They say, "Oh, yes, England has done very well; they are practical people." But I think distrust of stamping out measures results from a mistaken idea of what stamping out by slaughter really is. Stamping out by slaughter to my mind is not simply slaughtering the animals that are diseased and those immediately in contact, but it is in making a fire-break, as it were, round about them, taking away animals to which the disease might spread, that it is really valuable, and I think appreciation of this is the reason for what I think it is legitimate for me even to call the success of our recent operations. It has been the lifting away of the material, the fuel from the fire, as it were.

491. (Chairman.) Do they have any areas, like we have, in this country, infected areas?—Yes.

492. Large areas?—That is not laid down. Of course reading an Act does not tell you what they do. I am filling a lot of this in from what I know from reading foreign journals. Another disadvantage to my mind is this: They have a Central Board, but it is not a Central Board in the sense that ours is a Central Board, with a flying column. As soon as foot-and-mouth disease is declared in Great Britain the requisite number of officers are relieved of all other work, and go out to deal with the outbreak straight away. Perhaps the German method suits their political situation better; I am not in a position to criticise that, except to say that I do not think it is so good as ours. They have departmental veterinary surgeons in all the different States, and an administration in all the different States, and these States are supposed, they say they are bound, to co-operate with each other. Well, I have served, as I have said, in the colonies, and I served at a time before there was a United South Africa. It is all very well to talk of interstate co-operation, we met together and we used to swear that we would support each other and all that sort of thing, but you always find one is slacker than the other, and it is the slack lot that lets diseases get away. You have no power to compel them, and you cannot go to war with a State because it does not carry out regulations. I do not see how you are to compel them.

493. (Mr. Field, M.P.) The Central Authority has not the same jurisdiction and powers as you have here?—No, what I really mean is, they do not take off their coats and go at it themselves.

494. (Chairman.) It is haphazard rather?—Yes, somewhat. If a disease threatens to spread the Imperial Chancellor may appoint a Commissioner to see that all the different States are carrying out the regulations in a uniform manner. This is the thing that I rather take mental exception to; if the disease has begun to spread, they apparently wait until the horse is stolen and then they put on a man to close the door.

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But I do not care even if they did it from the first. I do not think that a multiplicity of administrations in dealing with contagious disease is anything like so good as a central administration, and I do not know any country without a central administration that has ever stamped out anything.

495. Well, now, Mr. Stockman, what country is there which acts on the same lines as we do, to a certain extent? I understood you to say there were one or two countries took our regulations?—Denmark does as regards foot-and-mouth disease; Holland has recently begun to.

496. You say in Denmark there are only 45 cases?—Yes, and they kept it out for a very long time.

497. What other country?—Holland. I have had conferences with the Dutch authorities, the veterinary and the agricultural. I had one perhaps a month or six weeks ago. We had some discussion with them about the 1908 outbreak. They came over and inquired even into our diagnosis, and I had a discussion with them then about stamping-out measures. They did not think much of it as a practicable measure, but I see by looking at the law that for several years they have had the power to slaughter and pay compensation. In this last outbreak they have been doing it, and they have been doing it well to this extent: they do not throw up the sponge when the disease spreads; they go on slaughtering, and it is not until, by common consent, the disease has got out of hand in a district and the slaughter will mean ruin to the milk and meat trade, that they stop. They then isolate that district, and they go on slaughtering in other newly infected districts. They told me that at that time they had spent no less than 50,000*l.* in compensation, and they were very pleased with the results. I put it to them, "Are you pleased with the results?" and they said they were. I saw in one of our official papers, and I just noted it before I came down here this morning, that in October 1911 they had 4,391 outbreaks in Holland, whereas in November they had only 1,089. Now, if you compare that with any of the other countries, most of the other countries show an increase, so far as my recollection goes. Of course, they had a very different proposition to us, with 4,000 outbreaks, to deal with by slaughter; it shows a great deal of courage to tackle it in that way. Although it has not been stamped out, the fact remains that in November they had gone down to 1,089 new outbreaks, from 4,391 in October. Then, as regards France, they have a similar arrangement to Germany, but they had no organised department for dealing with contagious diseases until 1909. In spite of all their scientific knowledge and all that they have suffered from disease, it was in 1909 that they organised a complete sanitary service; but there again there are too many organisations. The Minister of Agriculture, too, I think, is advised by about 20 people. I do not see how he can ever know whose advice to take or how to act in a pressing emergency. They have departmental veterinary surgeons in every geographical department, and they are acting practically as if we handed over foot-and-mouth disease entirely to the county authorities and gave them each an administration.

498. Then I may take it, Mr. Stockman, from you that there has been no friendly communication at all with any of the foreign Boards of Agriculture on this question; that it has never been mooted to them to take common action with ourselves as regards this disease?—Not to my knowledge.

499. (Mr. Field, M.P.) Not officially?—Not officially.

500. (Chairman.) That is what I mean, not officially?—There has been a great deal of talk about it in veterinary circles.

501. It has all come to nothing?—Well, you can devise and pass resolutions, and never hear anything about them.

502. (Sir J. Bowen-Jones.) I want to know whether your opinion is the same as Mr. Anstruther's. He gave evidence yesterday that our Acts of Parliament and Orders-in-Council in connection with them are sufficient to make us immune from the introduction of foot-and-mouth disease from live animals brought into

the ports in our ships?—Well, you mean to destroy all ordinary risk.

503. Are those Acts and Regulations sufficient to render the country immune?—Oh, I think so, so far as Acts can. I do not think that any further powers would help us much.

504. No, but do they do it?—Well, my view is that no Act of this kind will do anything, or no Order. It is the administration of it and the activity of the officers who have to carry it out.

505. But are those regulations and laws effectual in preventing live animals that come into our ports bringing in disease?—Yes.

506. They are?—Oh, I think so.

507. That was Mr. Anstruther's opinion too and it is mine.—Oh yes, I am quite satisfied of that.

508. Well then, you discard the idea that this disease is spontaneous, that it can arise of itself in this country?—Yes.

509. Entirely?—Yes.

510. And I think the usual opinion is that the origin of this and most other diseases, like the wise men of old, come from the East, is it not?—I have a note on that. The first description of the disease that we have on record was by Michael Sagar in Moravia in 1764. Now, of course, it must have been in existence before 1764, but it is not one of the diseases which we have been able to trace back even to the early days of the Christian era; the history of it apparently, as far as I can see, has been lost.

511. There is no tradition as to where it came from?—No, but it is quite true, of course, that most of our plagues have come from the East. It is also true, of course, that we are now sending one or two diseases there that they did not have before.

512. We are returning the compliment. Well, disease must have an origin somewhere. Mind you, the little I know about veterinary subjects is the one bit I learned off the late Professor Brown. The disease must have an origin. Of course, I have always accepted the theory that most of these diseases, like rinderpest, have come from the Russian Steppes?—There is no doubt about that in the case of rinderpest.

513. The disease must have begun some time?—Yes.

514. Why should it arise there; why should it take a concrete form in those parts, more than it should in England now?—Well, that, of course, is a very difficult question; it is going back to the creation. But I might give you some information about rinderpest from my experience in India.

515. From a scientific point of view, it is very interesting to hear your opinion on this?—In India, if you saw cattle plague, and even if you saw foot-and-mouth disease, you might not recognise it. Those of you who remember the fatal character of cattle plague in this country will be rather surprised to hear that in India I inoculated 80 animals before I got a typical case of the disease and before I got a death, and I have known of hundreds of animals inoculated with the virus and they have had only a very slight attack. You would not diagnose it. You might even walk through the herd and you would not even know that the stock were ill. The same applies to foot-and-mouth disease there. The reason of it is this, that it has been so long in the country that a large number of animals have got immune to it. That is how cattle plague first got into Europe. In the Russian Steppes, which contact with the East, cattle plague has existed for many years. The cattle are highly immune to the disease, and may show little more than an indisposition when attacked. The cattle that came from Russia and brought it westward were not recognised as ill, but when they were put into contact with the susceptible and virgin soil of the animals in the West, the western animals began to die like flies. Well, that, of course, is well known in regard to other diseases. We took measles out to the Fiji Islands and it has nearly exterminated the inhabitants. Cholera in India is of comparatively little account, but when it comes here, of course we know what happens. Tuberculosis: we have all got pretty immune to tuberculosis here, but if you take it out to the natives of India and some of the African natives it is another matter—in fact, they

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say it is about the only thing that will kill an African native—it comes on to a virgin soil. Then, I might further point out that I have lately got a virus of swine-fever here from East Africa. It went out from here originally. I have been able to trace it. I got it home, and I have experimented with it. It met a virgin soil out there, and had its virulence increased, and I never saw such an active virus; it kills everything.

516. And is your experience that the later outbreaks of foot-and-mouth disease in this country are less virulent than the earlier ones? Do you remember the 1867 outbreak; I suppose not?—I am afraid I was not born at that time. I am prepared to say this about the recent outbreaks, that part of our success has depended upon having to deal with a weak virus. It was a virus that had not the same tendency to spread; it was weakened; but when we got to the Middlezey outbreak in Somerset, and to the Rye outbreak, the virus had gained in virulence—in fact I would rather like to exclude the Rye and Middlezey outbreaks, because they did spread to a considerable extent, but then the Middlezey outbreak was one of the outbreaks that we got very late knowledge of—when a weak virus goes on to other animals it becomes activated again. But I do not think any of them were more virulent to start with than in the past. I cannot remember the 1880 outbreaks.

517. Now, you say it cannot in all human probability come in with live animals, and it does not originate here. That narrows the question down to the outbreaks that occur in England happening from intermediate contagion; you cannot make anything else of it?—No.

518.—Now, you say birds do not bring it, in all human probability?—Well, I am not prepared to say they do not.

519. Well, they do not take it themselves, you say?—They do not.

520. Of course the Chairman has taken you over the ground which must occur to all of us. How can we stop it; how can we stop it coming in, if it is brought in, as it must be brought by these different articles of merchandise that are imported into this country?—I think I have already expressed the opinion that I do not think it is possible to guarantee absolute immunity, but in connection with these articles I have mentioned, I did not say anything about the way they might be dealt with. I purposely left that to the members of the Committee to ask. But, if you want me to discuss that, I might now discuss it in connection with each article.

521. (Chairman.) I think that would be a very good plan?—Well, of course, I quite recognise that my business, as Chief Veterinary Adviser, is not simply to advise the Department on purely professional points; I have to take into account the necessities of trade. It would be ridiculous if I were simply to give them advice on how to abolish a risk without considering the interests involved. Anyone with a small amount of knowledge could do that. The difficulty comes in when you have got to make a compromise between what might be done and what can be done. You never have a clean slate to work on, and I do not mean to suggest that what I am going to say is in every case practicable, but I have made it as near practicable as I can make it, and it is for the Committee to decide. I suppose that they will judge the matter for themselves, after taking the evidence of the people it concerns. Well, as regards hay and straw, I can only say this, that you cannot disinfect them. There is nothing that you can do to disinfect hay and straw, and the only way to get rid of the risk with regard to them is to exclude them. Whether they can be excluded or not, of course is a question I would not like to pronounce an opinion upon; that is a question for somebody else.

522. (Sir J. Bowen-Jones.) Before you go from hay and straw, would you tell the Committee if you see any practical way of dealing with hay and straw used for packing?—I cannot, unless you destroy it on the spot.

523. Could not an Order be made that any importer should destroy or disinfect? Could it be carried out if it were made?—Well, it would be a difficult thing to get carried out. What I think would happen would be, you would find that with a great many importers you have only to ask them to do this thing and they do it, but then you would get the man who would not. It

would be an awful thing if you were to put on the police to see that an Order like that was carried out.

524. Then, you were going on, I think, to hides?—Milk.

525. Milk?—Well, I explained in an earlier part of the evidence that the virus of foot-and-mouth disease is very easily destroyed by heat. Now it does not hurt milk, in fact I believe it is good for it, in regard to keeping, to heat it to a temperature, say, of 60 degrees Centigrade for half an hour. It seems to me a very practicable proposition, that imported milk could be imported on a guarantee that it had been heated. And the same applies to fresh milk products. I do not know to what extent they are imported. As regards hides and feet again, I think that disinfection before shipment is a practicable proposition.

526. (Mr. Bathurst, M.P.) You do not think it is?—I think it is. The best way, of course, would be to have them disinfected on the premises from which they come—on the farm, but that I do not think is a practical proposition. At the port of shipment I think it could be supervised and carried out. The other alternative would be to disinfect them when they are landed here. Well, that I think is only a half measure, because they might by that time have contaminated the cargo. The same applies to anthrax, of course.

527. (Sir J. Bowen-Jones.) Would it be practicable to disinfect the holds of ships, to cleanse and disinfect the ships; that is more a Customs question, perhaps, is it?—Well, I had noted that yesterday; I could finish what I am at and bring that up. Then, as regards carcasses, I mean without the skin or anything, the only risk that can come from them, of course, is the possibility that at times, very occasional times, the blood is virulent. I do not put carcasses in the first rank, but the question has risen of dealing with calves in their skins. Now, at the risk of correction by Mr. Field, I think we might have a guarantee. You see these calves are all slaughtered, I think practically all of them are slaughtered, in government supervised or municipal abattoirs.

528. (Mr. Field, M.P.) That is so?—Well, I think it would be possible to get a guarantee that the animal showed no visible symptoms of foot-and-mouth disease.

529. That could be done easily?—And had not come from an infected farm. But a further guarantee would not be impossible. I understand that it would rather injure the trade if they had to bring them over without the skins. It keeps them clean, it prevents them drying up, and I think there would probably be some opposition to skinning them. But a further guarantee would be to bring them over, not only with their skins, but with their feet, their heads, and their tongues, so that our inspectors here can say “Well, I have seen every carcass that has come over, I am prepared to say that they “have sent us no foot-and-mouth diseased carcass.” I do not know what the objection to the heads coming and feet coming is; I suppose they use them for some other purpose. Then, as regards the vaccine which was mentioned in my list, I think it need never be excluded. I think that very effectual precautions could be taken to prevent any harm arising from the importation of vaccine.

530. (Chairman.) The importation of what?—The importation of seed-vaccine. All they have got to do is to isolate the animals that they have made it on for a certain time. If they do not break out with foot-and-mouth disease, they can disinfect them and turn them away, or do as many manufacturers do, send the calf for slaughter after it has been used for the preparation of vaccine. Well, that brings me to the point of the disinfection of vessels. In relation to foot-and-mouth disease, I do not think that the disinfection of vessels is a very important question. Anthrax is another question; I think it is a very important question there, because I think that a great deal of the anthrax that comes from vessels is shaken out of dried skins, and remains in the hold for a long time.

531. (Mr. Field, M.P.) If the hides were disinfected before they were shipped, would not that do away with the necessity of disinfecting the vessels?—That is another question, but that is the way to do it. If I might finish this vessel question just now: it would

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also be a very expensive thing, which, of course, might not matter.

532. (*Mr. Bathurst, M.P.*) Why?—The expense.

533. Yes, very expensive?—Well, to disinfect a vessel is a pretty costly thing.

534. We are talking of the hold of the vessel?—The hold and the deck, and you would practically have to disinfect everything that the cargo had come near.

535. Where the skins and other articles are carried, you agree, that is the great source of danger?—In foot-and-mouth disease?

536. Yes.—No, I do not in foot-and-mouth disease. No, I really think that as regards foot-and-mouth disease, disinfection of vessels is not a very important thing. What I think is, that the grain, if it be grain, is contaminated and brought over in a contaminated condition. I do not think it leaves much behind it, as in the case of anthrax, where there are dry spores which are shaken down into the hold of the vessel. But there are other difficulties in the way. For instance, many of the skins come over in vessels that have split cargoes; sometimes they arrive without any hides. For instance, I have been tracing anthrax in a certain part of Scotland where it was almost unknown before, and it came in with the introduction of the soya bean. The soya bean is quite harmless of itself, but it comes from an anthrax country, and we had the shipping inquired into. The ships brought no hides which they had landed at Glasgow. But, on following it up we found that they had landed some hides in Italy. If you have a split cargo—a ship coming in and landing a part of its cargo at one port, and then going on to another—you might damage the remainder of the cargo tremendously by some of these disinfectants, and without doing so you might not be able to disinfect a ship. But if you take an empty vessel, I think that you can with formalin gas and scrubbing disinfect that vessel with reasonable thoroughness. In fact, at some ports they have disinfection vessels, vessels that pump these disinfecting gases into the holds. But I really cannot honestly say that the disinfection of vessels is an important point as regards foot-and-mouth disease. In anthrax, I think it is very important.

537. (*Sir J. Bowen-Jones.*) Have you finished that part?—Yes, unless you wish to ask a further question.

538. There is one other question I thought I should like to ask apropos of the importation of foreign material and also as applied to our internal regulations, as to the period of the vitality of the bacillus. What is the minimum period in which bacillus is killed by air, or by time, or by other actions, what is the maximum?—Well, if you spread the virus out, say the saliva, or the contents of the vesicles, in a thin layer on a bit of rag, and expose it to sunlight for 24 hours, it loses its virulence. It can do no further damage. That is a laboratory experiment. If you go into the field, however, you will find these animals shedding bits of membrane that are perhaps an eighth of an inch thick. Now, these I do not think would be disinfected in 24 hours, or anything like it. I am inclined to believe—and you must remember that I have never had the opportunity and do not desire it in this country, to experiment to make certain about these things—that virus might remain active a long time in a thick membrane of that kind. Of course, a good deal of virus must be spread in a thin layer on the grass pastures. That goes away very quickly, and it has been found by observation, dating very far back, that there is little or no danger in re-stocking a pasture after three weeks. Here, for safety, we take a month.

539. Twenty-eight days, is it?—No, we generally are prepared to remove the restrictions in about a month, but it is usually a good deal longer than that before the owner restocks, and then after he re-stocks we leave one of our senior inspectors on the spot. He goes and examines the stock twice or three times, with a week's interval, and we have never found any recurrence of the disease under such circumstances. But, as I pointed out, there are conditions which we do not know in nature under which the virus is preserved.

540. When would the vitality be destroyed in a grain-infected cargo under the conditions of importation?—Well, I cannot tell you. I am rather inclined to believe, from the experience we have had here

of importation, that it may remain three months, or even more. You see, the Dutch hay had been in the country for about two and a half months, and I think the circumstantial evidence against the Dutch hay in Edinburgh was absolutely convincing. I could not get away from it, and at that time I was not a very great believer in importation by hay, though I admitted it as a possibility. But the circumstantial evidence was very strong against it in the Edinburgh outbreak. The recovered animal is also known, or has been known, to remain infective for about three months. It is not every recovered animal that does remain infective, but there are a certain number of recovered animals which have remained infective, and carried it about three months. I think all the evidence goes to show that three to four months is about the outside time that the virus, under any of the circumstances, will live. But I would not like the Committee to take that as an opinion that is formed on anything absolute.

541. (*Sir Charles Rose, M.P.*) I understand that you are satisfied yourself that this disease was completely stamped out before the recent outbreak in this country?—In all the outbreaks, you mean that the one outbreak was not connected with the other?

542. Yes?—Well, I can come to no other conclusion, unless it be that there is some unknown reservoir that keeps it up. I have never heard of it; I have never heard that suggested. I must conclude that these periodical outbreaks had nothing to do with each other.

543. You do not attach any importance to any suggestions that it could be lying dormant for any considerable period?—You mean the virus simply lying dormant.

544. I do not mean such a period as 30 or 40 years, as has been suggested?—But by lying dormant do you mean slumbering in other animals?

545. Under conditions that it might become active?—It is possible, of course. I do not think it is at all likely that it did, but it is possible, because if it is possible to bring the virus from the Argentine after three months, it is possible it would remain here for three months, but I have never been able to trace any connection between the periodic outbreaks, and the only suggestion that I could make would be that perhaps an occasional bird had kept the virus up in its intestines.

546. Well, it is not indigenous to this country?—Oh, it is not indigenous to this country; we allow nothing like that to be indigenous in Great Britain.

547. Well, I do not want to be narrow in that way, but you are satisfied that it is not?—Yes.

548. Then, we both agree that we have to look to foreign countries as the place where this comes from?—Yes.

549. And I take it, that you agree with Mr. Anstruther, that unless we can come to some arrangement with other countries to take the same drastic steps that we are doing, we shall be liable to these periodical outbreaks in this country?—That is my opinion.

550. It would not be possible to formulate any Orders by the Board of Agriculture really to make us absolutely immune from it coming in in some way or another?—No; we would have done it long ago if it had been possible.

551. That is the whole thing?—That is the position.

552. We must try to get some such drastic Regulations made in other countries as will assist us here in modifying our Regulations?—I think that would be the finest protection of all.

553. Is such a thing practicable? Perhaps that is hardly a question for you?—Talking as a veterinary surgeon, I think it is, but you know how political interests come in.

554. The practical part you could answer?—Yes, I think it is possible, although I want to say this of our neighbours: I do not think, with all due respect, their methods of actually handling disease are as good as our own; even if they were, they would be labouring under difficulties which we do not labour under—a land frontier.

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555. But do you think that a conference of all the countries who are interested in this could draft certain Regulations which, if they were to abide by them, would practically stamp this out without injuring the general trade and the breeding of cattle in these other countries?—I think so. I think, at least, it is a thing we should not say is not possible until we hear what the delegates from other countries have got to say.

556. And it is quite possible it would do good to other countries, instead of injuring them?—Yes; I understand they have almost rebelled in Germany against the Regulations, because they get so little benefit out of them, but the disease is spreading very rapidly there, and they are doing what they can.

557. (Chairman.) And we have had the people here rebelling against these Regulations?—Of a very much more restricted type.

558. (Sir Charles Rose, M.P.) I think you repeated again that your opinion is that the virus might remain active for three or four months under certain conditions?—Yes.

559. And you said, I think, that it might remain active in a cargo of maize for that period?—Well, it is possible to conclude that from our observations, if we admit that our circumstantial evidence against food-stuffs is good enough to incriminate them; I think that it is very strong.

560. In the Yeovil case, I think you said it was directly traceable to maize from the Danube; I think that is what you said?—No, I do not think I said that. I explained that we thrashed every clue to death, and that the only clue that we could get there was that the maize had come from the Danube and that they fed the chickens with it in the field where disease broke out, and that I thought it was very possible. I do not remember whether I said "possible" or "probable."

561. I think you said it stronger than that. Perhaps you will tell us exactly the circumstances of the case?—I did not intend to convey the idea.

562. Perhaps you will tell us exactly the circumstances which led you to believe that it came from maize from the Danube?—I did not intend the Committee to take that as a positive opinion. It was the only thing that we could say might have brought in the infection, and I am prepared to say that I think it is a very possible way of the infection being brought in, but, of course, I could not say definitely that it was the way unless I had taken up a quantity from store and taken it away for experimental examination; after the disease had broken out I could not have fully accepted a positive experimental result.

563. I was under the impression, from what you said, that you had really gone to the root of the matter and knew where the maize came from, so that you really could trace this case to its root, but that was not done?—No, that was not done to the extent of experimenting.

564. Have you found, in subsequent periods, that any of these cases have not been reported of foot-and-mouth disease, and had not extended?—No. There has been a little more delay in reporting one outbreak than another, but I do not think there has been any outbreak that had not been reported.

565. Never come to your notice at a subsequent period?—No.

566. Just to repeat what you said before, really the only solution of this is, apart from our own regulations and restrictions, to try and see what can be done with other countries to minimise the disease in those countries?—Yes, and the risk of invasion here.

567. You referred to the Argentine; you were not satisfied that some of it did not come from there. Have they had many cases of it there?—Oh, yes. They have had very bad outbreaks. They are perhaps paying us back in Europe. We did not send it to them; I believe they accused Germany of having sent it to them originally.

568. I mean recently?—But it has raged periodically in the country ever since. In a country like that they cannot possibly, with the best intentions in the world, go through and see that every herd is free in the great estancias, as they call them. It is lurking in places in a mild form, and then every now and again, for some

reason that nobody knows, up goes the virulence and it spreads.

569. (Sir Harry Verney, M.P.) There is a question I want to ask you only enlarging on the point as to the length of the life of the bacillus. I understood you to say that you had made experiments in regard to the maximum time that it would live; that you had made experiments with a capillary tube, sealing it up, and putting it in the dark?—I have not made those experiments; those experiments have been made; I was simply quoting from the ascertained facts which everybody agrees to.

570. The only thing I had got from you was that the 30 years was practically impossible. If you could fix anything in months it would surely narrow it down. Certain things exposed to the air for more than a certain time could not possibly be infected?—I thought I did that to a certain extent without binding myself to say that it was definite.

571. That is to say three or four months?—Three or four months. I have worked out these periods with regard to other diseases, the length of time that virulence exists. I do not think you can work it out mathematically to a day; you will always be face to face with this—well, my longest result is a month, we had better say two months for certain.

572. My point is, very elaborate tests and trying to keep within the line, as there would be to seal it in the dark and so on; if then you were only to get a maximum of three or four months, it would be very unlikely with anything brought in the ordinary way that it would last more than three or four months if the maximum, by careful experiment, is three or four months?—No, I do not think you could draw that conclusion.

573. I particularly noticed you mentioned cheese: you do not think you can draw that conclusion with regard to cheese?—No, it would have to be tested, to get a bracket as it were, and even then you would have to guess, but probably if you did 100 experiments you might get a pretty accurate idea.

574. All you can say is that you have no evidence that it might have lived after three or four months?—No, and our evidence of it having lived under natural conditions three or four months is circumstantial.

575. Under natural conditions three or four months, and yet under artificial conditions you cannot make it live any more?—I will not say that is the longest period; it is the longest period which has been found. If that were repeated you might get it six months under other conditions.

576. What I want to get at is, whether the length of life having been ascertained to be three or four months under artificial conditions, it is most unlikely that with hay it should have lasted three months, as in the Edinburgh case?—I do not think you can draw that conclusion, but I freely admit that these points are for experimental inquiry, and in the proposed inquiry which the President has foreshadowed these points are taken up. I have prepared a memorandum on that, and these points are included. For instance, one of the suggestions I make is that we should contaminate maize, a bag of maize and keep it and then test it; or contaminate two or three bags of maize, to test at intervals of a month, two months, or three months. The same with hay; contaminate a bundle of hay, and put it inside a bale or several bales together. Take one bale, open it, test it after a month, and so on.

577. Though three or four months is the maximum with artificial means, you are satisfied the Edinburgh case was due to hay which had been kept three or four months?—I could come to no other conclusion.

578. You said it could be killed by heat; could it be killed by cold?—No, cold preserves it.

579. Is there any danger from frozen meat?—I do not think that the danger from a carcase is great, but I am prepared to say that given a virulent carcase frozen, its virulence would last longer than if it were left under ordinary conditions.

580. Does that not bring in the question of the Argentine; is there not a certain amount of danger in the importation of frozen meat from wherever it comes?—I say there is a certain amount of danger.

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581. But you do not put it in the first rank?—I do not put it in the first rank.

582. (*Mr. Lane-Fox, M.P.*) You have come across the criticism, I suppose, from some pedigree breeders of stock that some of these cases have not really been foot-and-mouth disease; they have been mistakes. Of course, you do not consider anything of that sort?—No, but if I may say so, I am exceedingly pleased that has been raised, because I can give you very good reasons for the reverse being the case, if you would like to have them. I know Mr. Bathurst is interested. I heard him ask a question yesterday about experimentation. In the Edinburgh outbreak there was no question about the diagnosis, because disease had begun, I think, in six animals, and it went to 81 before I got up there, and before they were all killed I think something like 109 were affected. I may not be quite accurate about numbers, but I am near the point. Nobody ever raised the question there. In the next outbreak in Yorkshire, which Mr. Smart was at and which I met him at, the symptoms were very typical in the cattle, but there was this about it, that there were other cattle walking alongside that had not developed the disease, and they had had time to develop the disease. Several of them, before we had time to slaughter them, did develop it, but there were pigs on the place which had taken the disease without any experimentation, and if there had been any doubt in our mind, the fact of its having spread to the pigs was practically conclusive; it had all the value of an experiment. In the Hounslow outbreak it began in pigs. Now, that is an exceptional experience in this country to have an imported outbreak beginning in pigs, and I must say that there was some doubt in the first instance as regards the diagnosis, not by myself, because I went at a rather later hour. The local veterinary surgeon certainly had a doubt, and it was justified, because he knew that a certain thing had taken place that might have accounted for the symptoms in these pigs, and he telephoned immediately and said he would like to consult with me. One of my senior inspectors went out, and telephoned me that he thought it was foot-and-mouth disease; would I come out? I went out, and we went through the pigs, and we convinced ourselves that it was foot-and-mouth disease. But we were face to face with this: there were cattle there on this farm, and they have not taken it. I have a licence from the Home Office to experiment, on any premises I like, for purposes like these, and although Mr. Anstruther said yesterday that we had not done any inoculation, he had forgotten that. Of course, his mind is concentrated on administration, and he would not remember that point as I should. I inoculated two cattle, and my two cattle took foot-and-mouth disease, but before they did so others showed symptoms. Down at Rye, Mr. Smart was inspecting right on the outside border of our circle of the infected place. He found several sheep with very suspicious symptoms, but he did not think it was foot-and-mouth disease. Well now, the difficulty in diagnosing foot-and-mouth disease is not so much, in this country at least, to say that it is, but to say it is not when you are called in. The public never hear about it, but we get dozens of reports, especially after an outbreak, saying that foot-and-mouth disease has broken out, and we go down, and the difficult cases we have to deal with are the ones in which you have to say it is not foot-and-mouth disease.

583. You mean any sort of eruption?—Any sort of eruption may be reported; well, in this case, Mr. Smart telegraphed up to me, and said he would like to have a consultation about it, and I went down, and we decided it was not foot-and-mouth disease. But I inoculated another sheep; we would take no risk whatever as this was our outside circle; I was convinced it was not foot-and-mouth disease, but it was vital to make certain, so I inoculated an animal; that animal did not take foot-and-mouth disease.

584. (*Mr. Bathurst, M.P.*) May I ask, is that any kind of test for the disease?—Well, if you take the fluid from a vesicle, or from an eruption of any kind, and rub it into the mucous membrane of the mouth of a susceptible animal, and that animal does not develop foot-and-mouth disease, I do not care what the other

symptoms are in the first animal, I am prepared to say that is not foot-and-mouth disease.

585. (*Mr. Lane-Fox, M.P.*) That is what I was leading up to. In view of a doubt which has been expressed, would it not be any help on the part of the Board to adopt a more regular system of culture?—Well, it is not necessary. In none of these outbreaks was it really necessary as things turned out, except that Rye one, to prove a negative diagnosis.

586. There is some considerable doubt about the length of incubation of the bacillus, and there are a good many points of which you want to be quite convinced, I think?—You mean to get experimental evidence?

587. Yes.—You could not do it on a place which was infected.

588. I do not mean necessarily on a place which is infected?—You mean that I might take it to the laboratory?

589. Something of that sort, or establish an experimental station?—I have got probably the best disciplined laboratory, as far as that goes; it is a Government laboratory; my men are under discipline, but I would not undertake with any discipline, not even the German discipline, to keep foot-and-mouth disease on the place, and limit it to that place. The Germans have had to close their laboratory, and the French declare that the present outbreak which they have had came from the laboratory before it was closed. I do not think that is correct, but the Germans admit themselves that the disease got out from their station. Even if our men were soldiers acting under orders we could not guarantee to keep the disease inside. They did the same in France. They spent something like, I think, about 10,000*l.* on a place in Paris, a beautiful place—I went over and had a look at it—for these experiments.

590. It would not be safe on an island?—I really do not think that it would be safe on an island near the mainland, because the Danes have got it into Denmark now from their islands. They say that it has probably been brought over by the crows. I may tell you this, that the Germans have taken an island now and fitted it up. They did that in 1909. And then, of course, there is this we have got to remember. Suppose we took an island that is in British territory—I am quite willing to go to an island off the mainland of Germany or France—but suppose we took one that is British territory. Immediately we had a case of foot-and-mouth disease there, out would go an Order from the other countries forbidding importation from Great Britain. We dare not do it. The veterinary adviser would be officially hanged, and deserve it, if he did such a thing. I admit that I have brought back on two occasions—being very anxious to do an experiment—material to my laboratory. I have thought it over, and it has gone into the destructor. It would really be amounting to a criminal offence, with my knowledge, to start a centre of foot-and-mouth disease.

591. It was suggested yesterday that disease might be brought into the country by imported foxes. I take it that there are not at all many foxes being imported, are there?—Well, I would not say there are many.

592. You would not think that was a possible way?—No. I think there is a possibility of it if you had no quarantine, but all the foxes that come in are quarantined, like dogs for rabies, and I do not think it is possible under these conditions, and at any time the risk would not be great, because the dog kind is very difficult to infect.

593. But the importation of foxes is very small, as a matter of fact?—Oh, it is small; it depends on whether you agree with the importation or whether you do not.

594. I must say personally I do not?—Some men would say 25 was a tremendous lot to bring in.

595. (*Major Dunne.*) I think you told us that undoubtedly anthrax had been traced to imported oats?—Yes.

596. Especially in the case of army horses, that there have been several cases found?—Yes.

597. That anthrax has been traced to the importation of imported oats. I do not know whether this is a fair question to ask you, but do you think that the risk

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of the imported food-stuffs is great enough to justify further restrictions on those imported oats?—Well, I have already expressed my views on the matter in an annual report as regards cake, and I have come to the conclusion that it was not possible, that you could not disinfect cake without destroying it; you could not disinfect oats without destroying them, and the proportion of animals that die of anthrax in this country, in relation to the whole, is very, very small. I do not think we lose more than 1,000 animals from anthrax. I grant you it is too many, but it is a very small proportion of the whole. That being so, farmers would have to decide, are we going to give up the importation of feeding-stuffs to avoid this small loss?

598. It would mean the total prohibition of all feeding-stuffs to do so. That particular list you have mentioned has more relation to anthrax than it has to foot-and-mouth disease?—Well, I am not prepared to say that, and I am not prepared to say that the disinfection of hides might not be possible.

599. But with regard to feeding-stuffs, cake, or imported hay?—Yes, but my contention is that they are contaminated by the anthrax hides which are carried as cargo with them.

600. You mention, for instance, the use of cattle in agriculture abroad, in ploughing and so on, and, therefore, I rather gathered from you that oats coming from Russia, for instance, might very easily be infected through the animals being used for ploughing or threshing or whatever it might be. That referred to foot-and-mouth disease. Anthrax is rather another proposition. An animal with foot-and-mouth disease working could come along and might slobber all over grain, etc.; an animal with anthrax does not pass out any particular quantity of virus in that way. Its body is full of virus when it is dead, not during active life, but there is this to be said, if they carelessly open a carcase the flies might engorge themselves with anthrax blood and they may go on to the stores of grain, and they might excrete anthrax bacilli for weeks. But I really think that it is the hide question which is most important. All these feeding-stuffs that are accused of spreading anthrax come from countries where anthrax is very prevalent, and where anthrax is very prevalent there are always quite a number of skins being sent home and to other countries, which have come off animals which have died of anthrax.

601. Then, on the question of the disinfection. I think you have been asked various questions with regard to the disinfection of ships and their holds, and you evidently think that is rather a difficult question, but would there be any great difficulty in disinfecting the lorries and the railway trucks which have carried skins, for instance, and then might afterwards be used, and are probably used in carrying grain and oil cake or cotton cakes?—It would be an easy thing to disinfect for foot-and-mouth; it would be administrative, the objection.

602. As far as I understand, there are no Orders in force at the present time?—No, but there is one very great difficulty about anthrax. The anthrax that comes here does not come in as a bacillus, it comes in as a spore. The bacillus is very easy to destroy; an ordinary antiseptic will do it, but we have yet to find the disinfectant that will surely kill the anthrax spore. It is a difficult thing to destroy, so that the men who object to disinfection might quite reasonably say to you, "Well, but why this disinfection, putting us to all this trouble, when you have not got a disinfectant which will kill the spore?" Of course, washing is sufficient to wash a whole lot of it off. As a matter of fact, when you wash your hands you often get rid of the most dangerous stuff without any disinfection whatever.

603. A disinfection I take it for foot-and-mouth disease would be comparatively easy in this particular case as regards lorries and railway trucks?—The operation is quite simple.

604. The operation is quite simple; it would be no great expense on the owner?—No, but of course you can get some pretty practical evidence from the way a thing like that is received by studying the objections of many local authorities to putting the suggestions

of the last Swine Fever Order into force on carts coming into the market; they kicked against that very strongly.

605. I was not saying there would not be a very great objection, but I was only asking whether from your point of view the advantages might outweigh the disadvantages to the particular trades concerned?—I think where hides are being handled, especially dry hides, because it is from them the powder comes off, that any practicable suggestion about disinfection deserves consideration; but our difficulty, mind, is the administrative difficulty; we could tell them how to do it.

606. The difficulty would be to enforce it, of course?—Yes.

607. You have told us about France and Germany. Do you know at all what steps Russia takes in connection with the stamping out of the disease, or whether she takes any steps?—Unfortunately I cannot read Russian, but we get all the returns and they are in French, they recognise the language is difficult. On paper their procedure is excellent; their returns and everything are splendidly kept. In practice, I do not think they do anything. They are advised by highly-trained men, really distinguished men, but with a huge country like that, and a population like theirs, I do not see how they can do much. It is very much to their credit, of course, that they did make an effort and succeeded in driving rinderpest out of Europe. It is not in European Russia, but it still rages over the border.

608. Then, there is one administrative question. I was personally rather struck with Mr. Anstruther's evidence yesterday on the question of the destruction of cattle or undiseased animals on an outbreak occurring, and I think he rather emphatically gave it as his opinion that he did not consider the killing of animals was imperative. Do you agree with that view?—Well, I should have to agree that it is possible to get rid of the disease by isolation, but if you ask me which method I prefer to adopt under the circumstances in which we usually meet foot-and-mouth disease in this country, I must say undoubtedly, slaughter. But, I want to qualify that by saying that my idea of slaughter is not merely slaughtering the animals and those immediately in contact, but it is in making a skilful cut-out of animals in the neighbourhood to which the disease might spread. That is the thing which enables you to get at the foot-and-mouth disease. And then, of course, if the disease gets away—I do not think it should get away under a regime of that kind—but if it gets away, there must be a time when you must either stop slaughtering or end in bankruptcy, but I think that should be a long way off. I really think you should carry on with slaughter for a long time before you throw up the sponge. That is the advice I feel bound to give. I may tell you when I saw these gentlemen I spoke about from Holland, they told me they had spent 50,000*l.* and yet they were not free from disease. They have 1,000 outbreaks now, but they are quite pleased with results and they are prepared to spend more.

609. Then, one other small point. We have not heard at all—I do not know whether we shall get it from other witnesses—as to what takes place at the infected premises. For instance, as regards the disinfection of cowmen's clothes and of those who have had to handle or had to deal with the infected animals?—You will get all that from Sir Edward Clarke, but they are all destroyed. He will tell you all about that.

610. You began your evidence by telling us as to what animals are likely to carry the disease; you did not happen to mention hares and rabbits. One knows hares travel very great distances. I suppose it is possible for hares travelling across an infected area to carry that infection to comparatively a distant area?—Yes, as mechanical carriers, I think it is quite possible.

611. Are they subject to the disease themselves, or are they not?—Well, the evidence is that hares and rabbits are not; you cannot inoculate them, but some experimenters have asserted that they have produced the disease in rabbits. The general opinion is, and it is one with which I agree, in fact I am fairly positive about it as far as you can be positive about an experiment you have not done yourself, that you cannot

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inoculate disease to these animals, but as mechanical carriers I think they could act as such.

612. (*Mr. Bathurst, M.P.*) I suppose you are prepared to admit that our comparative immunity from disease compared with the Continent is mainly due to our sea frontier and our centralised administration?—Yes. Well, our immunity of course is due to the sea frontier, and our knocking out the disease and our being able to knock it out, is due partly to the sea frontier and partly to our central administration. One could imagine, of course, the awful ill-luck of the imported disease coming into a market and being distributed to ten or twenty centres at the same time, but of course we pray that such a thing may never happen.

613. But there is no reason to suppose that because on the Continent, in the case of countries with a land frontier, the disease can never be extirpated, that the same should apply to this country?—Oh dear no, but I do not think I would agree that it cannot be extirpated on the Continent. I mean it is a very difficult thing; they have a more difficult problem to get it out than we have, but I express the opinion that it could be kept out by the Continental people.

614. Out of their own countries?—For instance, France is always infected, or practically always infected, from Germany or from Switzerland. Well, I think it would be possible for France to keep it out, and they are going to have a try now. They have never really tried in our sense, and the only way in which they could try would be to do what we do, have a central flying column, and as soon as disease came on their borders go out and stamp it out. They had no power to give compensation; they have asked for it, and I think they have got it now.

615. My point is that if it is possible in the case of the Continent, it is still more possible in this country?—To eradicate it?

616. To eradicate it?—Yes.

617. To put a perfectly plain question, why should not we eradicate it?—I think we have eradicated it several times.

618. Why should we not take steps to avoid its recurrence?—Well, if we can settle upon the steps to take, I can see no reason whatever. I think everybody would agree that they should be taken, but are we not rather confusing the eradication and prevention of importation?

619. You are prepared to admit that being an island with centralised administration we are in a far better position than any other country in the world, not merely to eradicate the disease but to prevent disease being imported into the country?—Oh yes. I would agree to that.

620. Well now, you have already said that in your opinion the whole of the infection is imported into this country?—That was my opinion with regard to the outbreaks from 1908 to 1911.

621. 1911 inclusive?—These various outbreaks which occurred in these years. I think each one was separately imported, but I cannot prove it.

622. You would be prepared to admit that if all this infection is imported it is unsatisfactory not to have been able to ascertain the cause of origin in any one of the recent outbreaks?—Oh, I think it is; any one of us would give our ears to be able to put our finger upon it.

623. And that no stone should be left unturned in order to ascertain, if possible, what caused these?—No reasonable stone, certainly. I think we might pay too highly for some things we might do, but I agree we should do everything reasonable to find out how it does come into the country.

624. Now, what means have you in mind in respect of which you say we might pay too highly?—I mean experimenting, establishing a station for the upkeep of foot-and-mouth disease, and trying all the different ways in this country in which it might be brought in, and might be carried, and might retain its virulence.

625. But is it not a little difficult to ascertain the cause, unless we know, for instance, the length of incubation or latency of the disease?—Oh, I think there is a great deal we ought to know about it, that it would be a good thing to know about it.

626. A great deal more research is required into this disease than has been conducted?—Yes; but my point is, I would rather see it done away from England.

627. Yes, I quite agree you would rather see it done away from England, but the conditions are such in England that we are far more favourably situated to carry out such research work than any other country?—Oh, I do not think so.

628. Surely it must be so?—We are in some respects; for instance, we have no disease in the country just now, therefore we would be almost certain that the animals used for experiment were not contaminated before we put them under experiment. But the disadvantage of creating a centre in England—

629. Well, but now, after all, difficulties are made to be overcome, are they not; what is the great objection, what is your serious objection to Mr. Anstruther's proposal that we should conduct an experiment upon what you call an isolated island?—Well, my main objection is that the experience of Denmark is that it can be brought in from an island; but I am prepared to grant that that is a very much smaller risk than doing it on the mainland.

630. Quite so, but subject to proper safeguards the risk might be reduced to a minimum in the case of an isolated island?—Yes; but I would not be prepared to take the criticism of agriculturists, suppose it did come in in that way. As long as it did not come in it would be all right; but if it did come in they would say: "Very well, you should have known better; you should never have started it. You knew there was a certain amount of risk, and it was all very well to tell us it was not likely to happen, but it has happened"; and, of course, they might also say: "From past experience in other countries you ought to have known that it could happen." I would have to admit that; I do know it could happen.

631. But do you seriously think that the risks of it happening are appreciable?—Oh, I think they are.

632. With proper safeguards?—Well, we have not excluded the bird yet, and our proper safeguards would be that every man who was on that place experimenting would have to stay there. He would have to be a Robinson Crusoe; he would have to be marooned, as it were.

633. For a little time, till your experiment was complete?—Yes.

634. But is your main objection fear of criticism of agriculturists?—No, I bring the criticism of agriculturists forward; but my objection is that, with my knowledge of the thing, I have no right to do a thing like that. I would only do it under orders.

635. But there is another side to this question, which was put to Mr. Anstruther yesterday. Would it not be possible and desirable, assuming that you have an island station to feed to sound animals suspected food-stuffs coming from infected countries in order to ascertain whether or not those feeding-stuffs are the main source of the disease in this country?—Oh, that, of course, would be possible. Of course it is open to the objection that you might create a centre. But as a further criticism of that I would point out this, that we do not often get foot-and-mouth disease in this country in that way, therefore you are bound to conclude—

636. May I stop you? How do you know that we do not often get disease here in that way?—We do not often get disease, I mean, comparatively speaking; the importations are not frequent; I agree, if you like, that they are too frequent.

637. But surely that is not the point?—That is the point in this way. If you do not mind my interrupting you, it means this, that feeding-stuffs cannot be contaminated to a very great extent.

638. But we are sitting here to consider what is the source of the disease in the few cases that do occur in this country?—Yes, but at present I am discussing the probability of getting results from a line of investigation that you put before me.

639. I know?—I think we have got to agree that it does not frequently come into this country, comparatively speaking; and I think the conclusion from that is that food-stuffs cannot be contaminated to a very great extent. Well, if that be so, following this line of

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argument, you would probably have to do hundreds of experiments without getting a positive result. The line of investigation probably would not give you the results that you are looking for. There is an analogy. It occurs in anthrax. In the last few years I have been taking for experiment selected food-stuffs from cases of anthrax. They blame the food-stuffs, and circumstantial evidence is very strong against them. I have fed these stuffs very often to animals, and I have never got a positive result. Positive results have occasionally been obtained. My results are against the circumstantial evidence, but I still believe—and no number of negative results will convince me that it is not the case—that anthrax is brought in in that way. One of the reasons for it is this: I believe, when we get a case of anthrax, that the dead animal has already eaten the one bit in the food-stuff that you are looking for. The same would be found, I believe, in foot-and-mouth disease. I put it before you merely for your consideration.

640. The difficulty particularly is if you are not certain the food came from the same consignment or the same bin as that which is suspected. But let me take the case of Edinburgh—I have the Indian Secretary's report on the subject in my mind. At page 20 of the Report for 1908, halfway down the middle paragraph, it says: "Although foot-and-mouth disease had been extremely prevalent in the Netherlands in the autumn of the year 1907, especially round Rotterdam, no outbreak had occurred in the neighbourhood of the farm premises whence this particular consignment of hay had been exported, and it would therefore appear that the hay must have by some means been contaminated during transit to the seaport," suggesting, in fact, that the hay was not in this case the source of disease, but that it became infected on its way to this country. Then it goes on, and this, I imagine, comes from this last paragraph: "However that may be, the evidence that it had been the medium by which the infection had been conveyed was, in the opinion of the Board, sufficient to warrant the issue of an Order prohibiting, as from March 9th, the landing of hay or straw from certain countries." Well, surely that is a very unsatisfactory way in which to leave so serious a problem as this, and would it not have been possible in that case, and more satisfactory, at some isolated station, to have fed some of this particular hay to sound animals in order to ascertain whether or not it was the source of the disease?—Well, now, might I just for the moment refer you to my Report in the same volume?

641. (Chairman.) What page?—Page 6. "The only material upon which suspicion rested was a small consignment of hay imported from Holland, a country which was infected with foot-and-mouth disease. The said hay was brought into contact with the animals of the first outbreak on the 29th January. Four days afterwards one animal was observed to be ailing, and on the sixth day, after the hay was introduced, 30 to 40 showed unmistakable symptoms of foot-and-mouth disease." Still, it was only one bale. I think there were two; one went to another place, and caused no harm. This one bale of hay was kept on the premises for about two and a half months, and in reality it was not fed; it was not very good stuff; it was put down as litter and then they ate it. It was fed, but it was not put down to be fed. Well, by the time we got word of foot-and-mouth disease existing, clearly the stuff that had been put down was quite unfit for experiment, and if there had been more on the premises, there was not in this case, the mere fact of it having been on infected premises would have excluded it from strict experimental conditions.

642. You say it would be quite unfit for experiment, but apparently you do not consider that the feeding, in fact, even to animals by way of an experiment, is an improper process?—I do not mean improper in that way. We would then have had to go to get our material into the stalls occupied by animals with foot-and-mouth disease and take this hay away, and we could not have proved from a positive result under such circumstances that disease came from Holland.

643. You think there is considerable doubt even in

the Edinburgh case which resulted in the Hay and Straw Order; the hay was the source of infection?—No, I do not.

644. Whether there was or was not a sufficiency of suitable hay to feed to sound animals in this case, is there any reason why in other cases where you suspected foreign imported food as the source, a portion of the same consignment, if obtainable, could not be fed to sound animals?—Oh! no; that follows, there might be many cases in which there was still some of the stuff left.

645. Would you be prepared to adopt that course?—I should not without an order directly given me to perform experiments in this country.

646. Would you see any danger in it in an isolated island station?—Yes, I do. If it was far enough away I think the danger would be minimised.

647. What would you consider far enough away?—Well, I should like to go about 100 miles away.

648. (Major Dunne.) Would St. Kilda do?—I think that is too near. Besides, you would ruin the people there. They have got cattle on which they live; they are small holders.

649. (Mr. Bathurst, M.P.) I do not want to press you further about that, but it has been suggested?—I know it has been suggested, and I understood that it had been backed up by veterinarians.

650. You mentioned incidentally that in your opinion a recovered animal may remain infective for from three to four months?—I think there is very good circumstantial evidence that an animal that has recovered has carried the disease to another establishment three months after it has recovered.

651. How would he do that; through sputum?—It is a very difficult thing to say. It might possibly be that he carries the virus which is simply attached to his body; he becomes a mechanical carrier, as it were, after being cured himself.

652. Mechanically; do you mean by outside carriage or internal carriage?—No. I was coming to the other. He might be a mechanical carrier; that is to say, the virus would be deposited over his coat and he would carry the virus about with him. On the other hand he might retain something in his bowels or in his sputum. We know that that happens in swine-fever. We know that that happens in the case of enteric fever—typhoid.

653. Is it not most important to try to ascertain precisely by further research whether in fact a recovered animal does retain in its system the virus of the disease?—I think that is very important.

654. And is able to communicate it to other animals?—It has a very important bearing on the stamping-out business, and it is one of the things that will be undertaken in this proposed inquiry. I have mentioned it in this memorandum, which I do not think it is necessary to read.

655. That is a line along which you intend to conduct research?—Yes, in India.

656. You suggested that sunshine and air would have the effect of killing the virus?—Yes.

657. Well, I imagine that articles which come in bales, or otherwise, that are not readily permeable to sunshine or air, would be more likely to retain virus?—Yes. My idea about bales of hay is that it is probably in the centre of the bale, where it is excluded from light and sunshine, that the virus may persist.

658. And as a rule, I think I am right in saying, that those bales are mechanically compressed?—Yes.

659. How long do you suppose the virus could remain active under those conditions, an almost unlimited time?—No, I do not think so. I think really that, without being positive of it, there is a certain amount of evidence to limit it to three or four months.

660. Even in such cases as this?—Yes.

661. Where sunshine and air are both excluded the vitality will not last beyond three months?—Three to four. I would not bind myself down, and I cannot give a positive opinion because I have not experimental data, but, going by all the circumstances, similar outbreaks to the Edinburgh outbreak, with the same interval.

662. No experiments have been conducted to obtain

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further knowledge on that subject?—No, not to my knowledge. I have not come across experiments of that kind.

663. This, I take it, is a disease chiefly of the mucous membrane, is it not?—No; it shows itself in the mucous membrane, but it is accompanied by pretty high fever.

664. But the mucous membrane is bound to be affected in every case?—Yes.

665. You have not been asked by other members of the Committee, but if I may ask, what is your diagnosis of this disease?—Well, you mean what we go on?

666. Yes. What do you look to first of all to ascertain its presence?—Well, the first thing: it depends very much where you find the animals. For instance, if I am going to an outbreak, of course, I always go warned, I am going for a special purpose to see whether it is foot-and-mouth disease or whether it is not. If it were sheep, then before I came near to them the look of them would strike me. Probably I should see a lot of them lying down, and probably even if a dog runs in amongst them some of them would not get up, and then if they do get up they go very lame. Now they do not go lame as a foot-rot sheep will go lame, but they go on their toes. You do not get much slaverling in sheep; you may get a little. You then catch them, and you look for these vesicles in the mouth and on the feet. With cattle, if it is well developed, you can see them dribbling from the mouth, in fact, you do not need to see them sometimes, because they make such a peculiar noise with their mouth. You never hear it with anything else, and when they do that you may be perfectly sure, almost without looking. As I said before, the difficulty is when you have to say this is not foot-and-mouth disease.

667. It is fairly easy to diagnose; it is easy to the ordinary professional veterinary surgeon to diagnose as a rule?—Yes. I would not say that a man who has never seen it would tumble to it at once, but it is very easy for him to suspect it. I do not see how he can get out of suspecting it.

668. If he has been trained at all he knows what to look out for?—Yes; and I think most of them send up to us if in doubt. They are very often convinced it is, but say "I have never seen it before. I can get the Board of Agriculture inspector down, so why not send for him?" I think they are convinced in their own mind it is foot-and-mouth disease.

669. Why I asked you about the mucous membrane is because one rather remarkable case at Hounslow you traced to pigs which Mr. Anstruther told us were in a swine-fever-infected place?—The initial outbreak was on premises that were under restrictions owing to swine fever.

670. Swine fever too, if I remember rightly, is a disease of the lining of the intestinal track?—Lesions appear there. They appear on the skin, and in the mouth too, but very seldom.

671. Is it possible or conceivable that these animals were predisposed, were particularly susceptible, owing to their suffering from swine fever or about to develop swine fever?—That I would not like to say. I think they were practically over swine fever. They had been shut up, for I think about three months, but your question is difficult to answer. I think that anything that lowers the general health predisposes an animal, but I do not think that any predisposition of that kind is necessary for an animal to contract the disease. If they got an ordinary dose of the virus I think they would take it whether they had swine fever or whether they had not.

672. And there was no reason to associate in any way swine fever with foot-and-mouth disease as a disease?—No.

673. The Chairman asked you with regard to flies. Have any experiments ever been made with regard to flies, on the larvæ of these insects as probable carriers of foot-and-mouth disease?—No; in fact no experiments have been made with flies in relation to this disease.

674. It is desirable, is it not, that there should be experiments on those lines?—Yes. I think that from

these experiments we might make practical deductions.

675. I suppose the larvæ of different insects are apt to come in bales of skins and hides, and such-like, from abroad?—Yes; but to take our friend the fly, he comes in enormous numbers. My experience of tramp ships is that in Russia—in the Black Sea—they take in grain and take in a cargo of flies, and you are not rid of them till you get to England.

676. Yes; but the ova of foreign flies as well as other insects no doubt would be in these bales of goods?—Yes; I should think that is quite possible.

677. At any rate, that is a line along which research is desirable?—There is no doubt some of these flies transmit the infection of certain diseases to their progeny as well.

678. To their progeny?—To their progeny as well. The immediate descendants of the maggot may be infected with certain diseases.

679. Are you suggesting that the fly itself may suffer from foot-and-mouth disease?—No, I am not suggesting that flies keep up foot-and-mouth disease; but you can feed flies on certain viruses and find that the larval forms are also virulent; that is to say, that it has been passed through the body to the larva.

680. There is one common animal that has not been referred to, and that is the rat; is not the rat a likely animal?—I mentioned the rat as a mechanical carrier.

681. Only a mechanical carrier?—Yes; I do not think that there is any evidence that he can be affected.

682. But still a very likely mechanical carrier?—Yes.

683. Have any experiments been made with the view to ascertain whether rats do carry disease?—You mean foot-and-mouth disease?

684. Foot-and-mouth disease from one infected place to another?—No, I do not think anything; in fact, I know nothing has been done in that way.

685. There is no reason to believe that, for instance, in Somerset, where all these cases occurred, there was a large number of rats in the district?—Well, we have got no information about it, and, of course, it was a long time between the outbreaks. Virus could live that time, but I should think it would be more likely, as I said at an earlier part of the sitting, if these outbreaks were connected with each other, that was some upkeeper of the virus. If we admit connection between these outbreaks, we must assume the existence of some system of upkeep of the virus, an animal or something else in this country, but if it exists it cannot be a great system, because if it was a system that kept up an enormous quantity of it, there would be far more outbreaks than we really have.

686. Were any of these wild animals the ruminants; you have mentioned foxes and hares and rabbits and so on?—No; these are rodents and carnivora.

687. It is only in the case of ruminants that the disease is common, I understand?—Yes, but you can infect a horse, you can infect a man, you can infect a pig. It is very common in pigs, of course, in an epizootic.

688. With the exception of pigs, it is chiefly confined to ruminants?—Yes, wild and tame.

689. I do not quite know what you mean by straws of saliva?—Strings. It carries right up in the air like a long silk string.

690. You suggested that it might be carried, and probably has been carried, a very considerable distance by the wind?—Yes, on solids.

691. In that way?—Yes. I do not think the saliva itself, when it gets atomised, as it were, is carried very far. One might imagine, of course, these atoms being carried over the Channel from France, but if that were possible, I think we should be simply deluged with foot-and-mouth disease instead of getting it occasionally. A little bit of straw, and, as you know, the virus can go on to it, could be carried a long, long way. It could be carried miles if you gave it time, especially if it got into a stream.

692. As a matter of fact, when an outbreak occurs, is not the strength and the direction of the wind a

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factor which is taken into account?—Oh, yes: in cutting-out operations.

693. I do not quite mean that; I mean, take the Somerset case, where an outbreak occurs at premises adjacent to the first or previous outbreak, is the force and direction of the wind always taken into account?—Oh, yes; in Yorkshire it was the factor that spread disease to the one other infected farm. I think it was the factor. There was just one other possibility that it might have been a water track, but I think the factor that spread it to the second premises in Yorkshire was the wind blowing the saliva or bits of straw contaminated by it, over a fairly broad road, to another pasture.

694. Was it the source, in your opinion, of these Somerset outbreaks?—Yes, I believe it was the source of some secondary outbreaks. When I went down, across in the direction of the wind from the infected field there was an empty field, and the tenant said he had taken the cattle out of that field and put them about two miles away. He said they were perfectly healthy. Well, we had not much time, of course, to make up our minds, as we were running about inquiring into everything, but we immediately sent for them. These animals had been separated by a wide ditch from dangerous animals. We sent for them, and we confined them on their owner's premises, and they were examined the next day. I left that night (Friday) to confer with the Board. On Saturday they were examined and found healthy, but on Sunday several animals were affected. I think this second outbreak was wind-borne.

695. You do not consider that, as suggested, the cleaning out of the rhynes had anything to do with the spread of the disease in Somerset?—I do not think so. You mean by digging up the virus.

696. You have already told us that water is a positive means of carrying off a disease, and that you do not think in this case it was carried by the water down the rhynes, and that when the rhynes were cleaned out the soil was a means of conveying the disease?—No. You see, the rhynes were being cleaned out because they were dry. They were absolutely dry. The water that I refer to as carrying disease was let in by sluices. They have an arrangement, you see; they let in the water by an artificial system of canals, and they fill these rhynes. These were the rhynes that carried it; the other rhynes were perfectly dry.

697. You do not think that packing hay is a common source for the carriage of infection?—To animals? We have never been able to trace it, but I do admit the possibility of it.

698. It would be a very easy way to communicate disease?—Yes, provided any quantity of that stuff goes on to a farm, it would be attended with a certain amount of risk.

699. Do you not think that a large proportion does go on, not, I need say, to the farm, but as litter, direct to various animals?—Well, I have no accurate knowledge. I am told of these things, and I think it is possible; but remember this, that a lot of that stuff might be pretty old. I mean, I admit the risk of that being contaminated, but it might also be very old straw or old hay and all the virus might have disappeared from it. But, that is a thing you cannot take into account. I do not think we would ever know or be able to say about one bundle of packing stuff how long it was since it had been contaminated.

700. Do you think it would be possible to penalise persons for dealing with packing hay that has contained goods in such a way as to make it a source of danger to stock?—Penalise them! Well, I have personal views on penalties. Of course, a man does not care very much for the penalty, unless it is very heavy, if he is not likely to be found out. Well, there are certain things that are done in connection with the diseases of animals, for which, I think, the punishment should be imprisonment. I think that probably might stop it. In the Abortion Committee we had various suggestions about penalties. They varied from a fine of 2*l.* with costs to crucifixion. Witnesses were very strong on penalties, and it is a debatable point how far the penalty deters a man.

701. You do not think that it would seriously inter-

fere with trade or the liberty of the subject if you were to put some restraint upon the persons receiving goods packed in hay or straw to prevent them selling it or handing it over for use either as food or litter?—My view on the matter is that, before deciding, I would like to sit here as you are doing really to interrogate witnesses whose business is handling this stuff. I feel very strongly on the point. I know there are certain things you must do to preserve the country from disease disastrous, and not consider anybody's convenience; there are things which are of that importance. But I do not believe in rushing at the thing, spoiling a man's business for a purely theoretical thing, and even if it is more than theoretical, I would not like to do it without hearing the man, and to what extent it is going to damage him.

702. With regard to disinfection, is it necessary to link the two diseases, anthrax and foot-and-mouth disease, together, for the purpose of considering the possibility and efficiency of the disinfection of the holds of ships? I mean, to put it more clearly, I gather that you consider to disinfect against the spores of anthrax would be a serious and very expensive matter, but that to disinfect as against foot-and-mouth disease would be a much less serious and a comparatively inexpensive matter?—I think I would rather put it the other way. My point was that you could do your disinfection against anthrax, not of the supposed infected part, but of the whole vessel. After the vessel had been emptied you could really get at empty holds. But in foot-and-mouth disease I do not think the hold is so important. I do not think the virus of foot-and-mouth disease shakes down in dust, as it were, and lies at the bottom of the hold for years as the anthrax spore can.

703. No, but it might, I suppose, be on the surface of hides or rugs, textile material?—That, again, would be disinfecting the material—the cargo.

704. And be continued upon the surface of the sides or floor or hold of the ship?—And then contaminate some other cargo?

705. Yes?—Well, that is possible; but, of course, you get rid of the virus of foot-and-mouth disease in three or four months or less; I think that is the outside period; but as to the spores of anthrax, that vessel may be an anthrax vessel for several years. It is a much more serious disease, anthrax, in this respect.

706. I agree. Why I am afraid of associating the two is that in the case of anthrax it would have to be a most searching disinfection, but in the case of foot-and-mouth disease such stringent measures may not be so necessary?—Yes.

707. What disinfection would effect your purpose in the case of foot-and-mouth disease?—On an empty vessel?

708. Yes?—Formalin vapour would do very well.

709. Some soap?—I should do the wetting with the garden sprays. That is the way I do all my laboratory boxes. You have an atomiser on a long stick, and you go all over the place. You can do the whole thing in quite a short time if you have an empty hold.

710. I was wondering whether, in washing the ship, you could make it one process by the use of some soap?—No. I think that in most cases of gaseous disinfectants their efficacy depends very largely upon the floors and the sides being damp. A dry formalin gas is not a good disinfectant, but formalin and water is a very excellent disinfectant.

711. Is formalin now inexpensive?—Oh, it is expensive.

712. Is there not something equally efficacious but less expensive?—In the form of a vapour? Yes, there is sulphur. You heat it, and the sulphurous acid, which is an oxidising agent, comes off.

713. Sulphuretted hydrogen?—No, sulphurous acid.

714. There is one other thing I want to ask you. The Chairman has read certain statistics which we have had given us in the House of Commons and elsewhere relating to the outbreaks abroad?—Yes.

715. They are expressed in totally different ways as coming from different countries. For instance, in one place infected places are spoken of, in another place outbreaks are spoken of, and in another place cases are spoken of, and I think there is quite another

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description. Would it not be possible, by international arrangements to obtain some common denomination so as to really know where the bulk of the cases are?—Yes. I think we have a paper in the office dealing with that. Germany started it. It would be a good thing if we all adopted the same names and the same way of expressing our outbreaks. We had some correspondence, but it came to this: that we thought our way was the best, and they thought their way was the best. I agree it would be a very much simpler thing, because if you look at them it is very difficult to see just exactly what they do mean.

716. We are trying to get at the chief source of this disease?—Yes.

717. Can you tell me, by perusing that list, in what part of the world to-day this disease is most prevalent, I ask you, because I cannot?—From that list?

718. Yes?—Well, I do know. You see, I form my ideas from a totally different source; I read the scientific journals.

719. However, you will agree that is no accurate guide?—No, not the way it is expressed, but it is a very useful piece of information.

720. Well, comparatively useful?—Yes.

721. May I ask, as the result of your scientific inquiry, what is the country where the disease is worst to-day?—Germany and Russia. In France it is very bad, but it is worse in Germany and Russia.

722. Are there any effective measures—really effective measures—ever taken in Russia to-day to prevent its spread?—Well, I do not think so; not in the sense that we call measures effective.

723. Or measures they practically would call effective?—Nor in that sense either. In criticising the German method I did not mean to say that the police method is not splendid. They seem to worry the people to death with the police. We would not stand it in this country. But in spite of all that worry they cannot keep the disease on an infected place. A policeman may stand there with his baton or his fixed bayonet, but he cannot confine foot-and-mouth disease to the place.

724. There is more grain comes to-day to this country from Russia than from any other foreign country in the world?—That I do not know, but I think it is likely.

(Chairman.) That we will get from the Customs.

725. (Mr. Bathurst, M.P.) Yes. There is one other question I want to ask you. We have been told, with regard to the Hounslow outbreak, that it may have been derived from the use of foreign vegetables which were found in the pig-pail; is that a possible or usual source of infection, to your mind?—It is possible, but, as I pointed out, our trouble has been that no factor in these outbreaks has occurred twice. We could not get cumulative evidence against the vegetables or any particular grain or any particular cake, but these vegetables came from an infected country—I believe they came from Holland—and the assumption is—it is purely an assumption—that they came in contact with disease, indirectly perhaps, or through the animals walking over them with the virus of foot-and-mouth disease.

726. No particular experiments were made with regard to these vegetables at the time they were discovered on the Hounslow premises?—No; in fact, as far as my recollection goes, there were not any there by that time; they had been eaten.

727. There were not any?—There were not any of that particular consignment.

728. There is one thing which appears evident, from what you have told me, that an immense amount of research is still possible with regard to this disease, and that if the Treasury were to make you a considerable grant towards conducting considerable experiments into foot-and-mouth disease, you could apply it very usefully?—I think it is a disease that requires a great deal of investigation still.

729. (Mr. Hinds, M.P.) I think you told us that you traced all the outbreaks in Somerset from that first Somerset outbreak that you had reported on 28th September?—All the contiguous outbreaks to the first within a radius of about two miles.

730. These were all within a radius of two miles,

these Somerset ones?—Yes. I do not say that the tracing was absolutely convincing, but I mean we knew that the roads had been contaminated, and we knew that those rhynes were running down in the direction of certain secondary outbreaks, and there was no getting out of it that the one outbreak there depended upon the other.

731. What lapse of time occurred between the outbreak and when it was reported to you before the 28th September?—Well, I should have to look that up to be accurate, but I should think it was about two days. I am speaking purely from my recollection. If you leave that I will give you the times accurately.

732. There was no considerable time elapsed?—Yes (referring to notes), that is about it. I can work it out from this. On the Monday the animals were seedy and it was not diagnosed, and they went on until the Wednesday, and then the veterinary surgeon who was called in said that he thought that it was foot-and-mouth disease and should be reported to the Board. One of my senior inspectors went down on the Thursday. He wired up to me that he thought it was foot-and-mouth disease, and that I had better come down. I went down on the Friday and confirmed. It may have started on the previous Sunday. It might have been the Saturday, you can never be quite sure, when a man has his animals in a field; but our information was that it was on the Monday, the 25th September, that it was first noticed.

733. Had the local veterinary officer any power to order the slaughter of these animals?—No.

734. They must be seen by the officer of the Board?—Yes.

735. In your opinion has the Board all the powers that it is desirable you should have to cope with any outbreak?—Well, I think we have from Parliament, except as regards one thing that really does not so much apply to this disease. I mentioned it in my précis, and I do think that we should have general powers from Parliament, both to forbid dangerous inoculations, except by our General Authority, and also to order it. I do not say that it specially applies as regards foot-and-mouth disease. I should only resort to inoculation, preventive inoculation with serum, if the disease had got away from us, which we all pray will not happen. But under such circumstances I think we ought to have power to order inoculation, or if a man says: "Well, I am going to inoculate with a dangerous virus, because I do not want the disease to come my way," we should be able to forbid it. If he uses a dangerous virus and infects his animals and spreads it to his neighbour, I think his neighbour has good ground for complaint. Barring that, I think we have all the powers that we require, except one. I think that probably, if it were possible, we should make it compulsory, as they do in Germany, for a larger number of people to report disease—knackers and butchers—everybody connected with the trade. I think that would be an advantage; I do not know whether it is administratively or legally possible. The following is the text of the German law in relation to reporting contagious disease (Article 9):—

"Should a disease break out which, according to Sec. 10, must be reported, or should symptoms appear which give rise to the fear that such a disease may break out, the owner of the animals in question must immediately report the case to the police authorities or to some other office to be named by the State Government, and he must also remove the diseased or suspected animals from places where the danger exists of other animals being infected.

"The same obligations apply to persons who are at the head of an establishment as agents of the owner, to those who look after animals for the owner, to those who, in their capacity of herdsman, shepherd, cowherd, dairyman, have the care of animals belonging to several owners or to one owner, which have been outside the limits of the estate of the owner; the obligations also apply to persons accompanying animals in transit, and in the case of animals in the custody of strangers they apply to the owner of the farm premises, stabling, paddocks or fields.

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"occupied in practising veterinary science or who professionally castrate animals are bound to report cases immediately, and also meat inspectors, including trichina inspectors, and, further, persons who are engaged in the occupation of slaughtering, and those who are professionally engaged in preparing, selling, and removing slaughtered, killed, or dead animals or parts of animals, if, before the police interfere, they receive knowledge of the outbreak of a disease which should be reported (Sec. 10) or of symptoms which give rise to the fear of such an outbreak."

736. You think that some Regulation is required with regard to imported milk, that it should be heated; I think you said something with regard to that matter?—I said that is one Regulation which might be considered. I do not pretend to be the judge of what is possible, but it seems to me a practicable proposition for the Committee to consider.

737. And with regard to calves and skins?—Yes, something might be done.

738. The only possibility of the outbreak in Somerset I think you traced to the Indian corn that was given to the chickens?—I said it was the only clue we could get.

739. Are there any steps taken in India? You have said something about your experience in India; are there any steps taken in India to exterminate the disease at all?—No.

740. Can you in any way account for certain parts of the country being immune from this disease? It was mentioned yesterday that Jersey was immune, that Ireland was immune to a great extent?—Well, I cannot account for Jersey. I do not think they import things to the same extent that we do, and if birds carry the disease or if it is borne by air to long distances they ought to get it oftener. But as regards Ireland, I think that they have this country to thank for it. I think we act as the buffer which saves Ireland. It is a curious thing; it is bound to strike us all, this immunity of Ireland from a disease which goes about so mysteriously. I have discussed it with the Irish officers, and the conclusion we came to, without all the particulars before us, was that Ireland did not import anything like the quantity of feeding-stuffs and so-called dangerous articles, as we do.

741. Do you find the cattle are more susceptible when at grass or eating feeding-stuffs?—I do not think it matters.

742. How prevalent have you found this disease in human beings; have they been attacked; how many cases have you come across?—I have never seen a case in human beings, but a good many outbreaks are recorded.

743. (*Major Dunne.*) Any in England?—Yes, I believe in the eighties there were some cases in Yorkshire.

744. (*Mr. Richardson Carr.*) In Battersea?—I know there were some recorded cases in Yorkshire.

745. (*Mr. Hinds, M.P.*) You do not trace the disease to a great extent to cake and artificial foods?—I think they come under grave suspicion.

746. They are in the second line?—Yes.

747. (*Mr. Nunneley.*) Just to follow the line, you say you have never known it yourself among human beings?—I have never seen it; I fully accept the report.

748. Do you really think yourself that human beings are subject to it?—Great authorities like Virchow have diagnosed it.

749. The same with horses, dogs, and cats, that might have it; have you ever known any cases of their taking it in a natural way without it being forced on them?—I have known a dog affected.

750. One single dog?—One single dog.

751. I was pretty well conversant with this disease in the seventies and the eighties. Several times, myself. I frequently had horses grazing in the same field with cattle and sheep that had it. I never had a case and never heard of one?—I want it to be clearly understood that it is the exception, but actual cases have been recorded and there is no doubt about the inoculation experiments.

752. I understand you might force it on to them, but, personally, I thought that they were really immune

by natural means?—Well, I think, for all practical purposes they are immune. We disinfect horses' feet here before they leave infected premises.

753. Practically, it is only cattle, sheep, and pigs we need think of?—Goats, of course.

754. It is confined entirely to animals with the cloven hoof?—And wild animals which are imported.

755. Hares, rabbits, dogs?—No. I have never seen it in hares and rabbits; I think these act as mechanical carriers.

756. (*Mr. Field, M.P.*) Deer?—Reindeer, of course, suffer from it very badly.

757. (*Mr. Nunneley.*) There was something said about diagnosing this disease; it is not a difficult disease to diagnose by anybody who has seen?—No.

758. And in anything like a bad case you mentioned that noise the cattle make; there is always that peculiar champing; would you call it?—Yes, a sort of smacking with the lips.

759. Are there any other diseases that cause that?—I do not know of any.

760. That is an invariable symptom of this disease, and no other?—Yes; an animal might get a potato in its throat and make something very like it, but where you hear a number of animals making that noise you may be pretty sure of what you have got.

761. Cattle will readily give it to sheep by the saliva. The sheep will not give it nearly so readily to cattle will they?—Yes, I think they would.

762. Sheep will not shed the saliva?—No; but if they are grazing on the pastures they will infect these pastures. I would not like to say that there was any distinction in that.

763. When we had it we never used to consider any danger of sheep giving it to cattle. We brought sheep to market, we never thought of keeping them away, but if we brought cattle we quite expected them to give it to the sheep?—Although I say that my experience has been here, in the last few years, that given an outbreak amongst sheep it spreads with as much rapidity as amongst cattle, I am not prepared to say that in the first instance the sheep are not more resistant, because you do find, as you say, that the cattle may have it and the sheep may not.

764. But you very rarely find the sheep have it and the cattle not, do you think?—I would not like to say that.

765. The chief cause, no doubt, of the infection, is from the saliva?—Yes.

766. Is there any discharge from the feet that would spread it?—Oh yes, vesicles appear on the feet and contaminate the pastures.

767. You think they do discharge?—Oh yes.

768. You rather recommended, I think, that the calves that are imported should have their feet and heads left on?—That was to satisfy ourselves the exporters were playing the game.

769. Would it not make them rather more dangerous if they had the feet?—It would in a sense. On the other hand, in knowing that the danger is there, there is more safeguard; knowing that it is there you can destroy it.

770. I take it there is no infection can come through the hide in itself, from the body?—No, the saliva might be thrown on to the hair.

771. It is only that the hide would be a vehicle of conveyance of the saliva which had been spilt on it?—Yes.

772. So it is not the head itself that is dangerous, even if it came off an infected animal?—No, that is not so; the lesions would be dangerous.

773. There would not be so much difficulty in disinfecting the heads; it would be only an outside disinfection?—That is the head after it is taken off the carcass.

774. With regard to this importation, I take it it is almost the same with regard to the hay and straw, and so on; it is very rarely indeed that it would be possible for the hay and straw to be infected during the growth in itself, it would only be saliva spilt on to it in some way?—Yes, or suppose they rake their hay up, using oxen, they would go rubbing their feet in it.

775. In that case it would not be the hay infected

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from the ground growing up; it might be?—No, but there might be a haystack with the animals licking and pulling at it.

776. In the same way with manufactured food, you said that cake might be dangerous?—Yes.

777. Any infection in the materials of which the cake is made would be killed in the process of manufacture, would it not?—Well, the compound cakes, I believe, are cooked at a pretty high temperature. The others are not, but I think on the whole manufacturing processes would destroy it if there was virus in the grain. But I never intended to suggest that there was anything in the possibility of cake infection, except by indirect contamination.

778. That is what I mean. It would have to be from saliva or something of the sort being spilt on to it?—Or feet being put on the top of it; something of that sort.

779. Not being in the cake itself?—No.

780. It would be on the outside and would be more likely to be from bags; cake imported in bags?—Yes.

781. You do not think that the infection would remain alive on the bags or anything of that sort for any great length of time?—No; you see it would be a very thin film in that case; I should think the bag would be fairly quickly disinfected by natural processes.

782. With regard to the hay and straw, I take it you think the most dangerous is the hay and straw used in packing that comes to this country?—I would not like to assess the danger altogether. If I had to do it, I think I should say milk was the most dangerous.

783. I was not thinking so much of milk?—What I feel about the hay is that so far as it can be brought home to it we have brought it home to it.

784. You look upon it as one of the first causes; you look to it more than anything else?—Yes, we have most evidence.

785. This is more a question for the Customs, but would it not be possible for England to prohibit the importation of articles packed in hay and straw from countries where the disease is known to prevail?—I think you would better get that from the Customs.

786. You do not think there would be any danger with regard to other material, shavings, or papers; there would be comparatively less danger, at any rate, from them?—Yes.

787. I think you said you did not know, of your own knowledge, that hay and straw used for packing would go at all on to farms?—To a great extent.

788. They do?—Yes; I am not quite prepared to hear it. I do not pretend to know particularly about what is done with that hay.

789. I agree with you; it would be almost impossible to stop the hay and straw used in packing, when once it comes here, going out; you could not follow it all?—Yes, I agree.

790. This is more a question for the Customs, but do you think it would be possible to stop countries who are badly affected using hay and straw for packing?—I would not like to express an opinion upon that.

791. We were told hay and straw do come for fodder from the United States and Canada. Mr. Anstruther told us yesterday that they are now free from foot-and-mouth disease?—Yes, that is so. They are amongst the people I have alluded to who have got the Anglo-Saxon quality of knocking disease out; they stamp disease of that kind out.

792. How long has the United States been free?—The last outbreak in the United States was 1908.

793. (Chairman.) That was the New England one, was it not?—New York and Pennsylvania States.

794. (Mr. Nunneley.) And you think that now the ranches are free?—I think they are free; it did not get on to the ranches.

795. Did it not?—No, it was on the small farms; they had a certain amount of luck.

796. You do not think there is any possibility of it now coming to our ports by live animals slaughtered at the port of entry, but yet being carried outside the slaughtered vessels?—No; I do not think there is any danger at present, as far as that goes, in connection

with Canadian or American cattle. Those are the ones which come.

797. (Mr. Field, M.P.) They are the only ones that come in alive now?—None into the country, but they are allowed alive to the port for slaughter?

798. (Mr. Nunneley.) They are countries where there is disease, I believe; they are not allowed to come into the country at all?—Not allowed into the country at all.

799. With regard to the question of whether we could enter into any common arrangement with the continental countries, you say the idea has been mooted among the veterinarians; do you think there would be any possibility of that being brought about?—Well, I think you would get the veterinary profession in all the countries to be unanimous upon it.

800. If the governments would?—Then it would follow that it would be a question for the Foreign Office, I should think, to arrange.

801. In your idea you think there would be no danger with regard to the veterinary inspectors of other countries?—Oh, I do not think so at all; I think you would find a unanimity of opinion.

802. Mr. Bathurst rather pressed you with regard to experimental stations. Now supposing you had such a station and that you could get part of the consignment; take the Edinburgh case where you feel certain that the outbreak was due to a consignment of hay, would it be much satisfaction or much proof to your mind, either that it was that or that it was not that, supposing you could have had an experimental station, and used the other part of the consignment there, if it did not cause any outbreak?—Not if it did not. A positive result, under experimental conditions, of course, would be convincing. The great objection to a lot of these experiments is that you are so certain to get a negative result in perhaps 99 per cent of the cases.

803. And in most, if not all of these cases, supposing the outbreak has been caused by the importation of foreign stuff, the probability, I take it, is that the consignment of foreign stuff would not be inoculated right through, but only just a very small portion?—That is my view.

804. You spoke of Indian corn. It might be only a handful of that?—A pocket, as it were, of the grain or of the hay was my feeling in the matter. I have given my reasons for it. If it were not we would get dozens of outbreaks.

805. An experimental station would not be any use in that way?—I do not think so; I do not think we would get the results.

806. As things are now, if you had an experimental station cultivating the disease, and had the disease on that station, I suppose it would mean the closing of our export trade?—That would happen at once.

807. Even if it were on an isolated island, so long as it were a British island?—I think they would be very ready to put on the embargo even for an island off our coast.

808. Supposing you were the veterinary adviser to France or Germany, what would be your attitude?—I should say, stop them. I should say, no animal from any country with foot-and-mouth disease is coming into this country; we are entirely free.

809. (Mr. Richardson Carr.) When this disease breaks out on these farms and you proceed to deal with them, are any precautions taken with regard to the local veterinary surgeon carrying the infection to another farm?—We leave that to him.

810. You do not give any orders?—Well, we issue a request.

811. I understand from you that the disease can be carried on your bodies or on your clothes. The veterinary surgeon may go to the farm and report to you that it is foot-and-mouth disease, and he really may go to another farm immediately afterwards?—Quite so. When I said we hustled at outbreaks, one of the first things we do in hustling is to send an inspector to see the veterinary surgeon who attended and say: "Now give us a list of the places you have visited since you have been at this place." Our non-infected inspectors go all round these places. Sometimes the veterinary surgeon will say: "I have done nothing since,

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or changed my clothes and my boots and had a bath." They will give us the list of places. Some men tell us: "I have not done a day's practice; I have given it all over to my assistant." The man who has not an assistant must go and do his work, of course.

812. Are there general orders given out to the veterinary surgeons in the country, or would it be wise to do so?—I think they would resent it; they would think we were insulting them by suggestion.

813. You think they would?—Yes.

814. They surely must be a great source of danger?—Oh! I do not think so.

815. Suppose a veterinary surgeon goes into a shed where foot-and-mouth disease is, and then proceeds to another farm?—Yes, but I think for the veterinary surgeon who did that I could not suggest too heavy a penalty, but it should be very severe if he did it knowingly.

816. Then about the people who live on this farm, what do they do?—Well, they are told the rules of the infected place, which are to be found in the Orders; there is only supposed to be one attendant on the sick animals, and this is what they are told to do, and I think as a general rule they carry it out.

817. They do. You would not allow cattle-dealers to come on the farm?—No.

818. What about the dogs and the cat; are there any orders given about them?—Oh, yes, they are all tied up. We ask for them all to be tied up, and dogs in the district are tied up as far as we can effect it, and poultry are kept from wandering.

819. In the farm?—In the farm.

820. Of course, your inspectors when they go down there take all these precautions?—They wear special clothing and rubber boots, and before they come off the place they disinfect their boots. They wear fresh overalls if they have to go to any other place when there is no other man available. We always try to send a clean man to go round on a house-to-house visitation, a man who has never been near an infected place.

821. Does it sound rather curious that Jersey is so immune as it appears to be?—Yes. I think it is a very curious point.

822. I do not know whether this is a question to ask, Mr. Stockman, about the rules of the shipping, whether the rules for carrying cattle, or the rules for the importation of hay and straw, are the more stringent. I know they are very strict about cattle. No live cattle are imported on fodder of any sort?—No.

823. Do you not think it rather points to the fact that the infection does lie either in the cattle or the hides, or the hay or the straw?—That is how it has struck me.

824. If it were not for these things coming on, Jersey being free, the probability is that it lies in these things?—It possibly might enable us to eliminate certain things that Jersey takes and Ireland takes as they never get foot-and-mouth disease. We would still have a lot left.

825. You have been to Jersey, of course?—I have not been to Jersey.

826. If the disease did get on to Jersey it would create great havoc because the cattle are kept in a condition to foster any disease?—So.

827. In view of this foot-and-mouth disease being abroad, I take it you think it would be very undesirable to let any live store cattle off into the country. You do not think that would be a wise thing?—I think it would be fatal. I would not undertake to keep disease out then. I would not undertake to keep it from spreading over the country then, except at enormous expense.

828. If you let live animals in?—If we let live animals in.

829. You think it would be very unwise to alter this restriction?—I do not think you would give me a veterinary department big enough; I do not think the public would stand the expense of a veterinary department big enough to deal with it.

830. Do you think the notice about foreign milk is a source of danger? In what way do you think that is a source of danger?—Well, I understand that a good

deal of foreign milk does come in, and I know that milk from an infected animal may be virulent.

831. Certainly; but when it comes to England, how would that come in contact with the animal do you think?—My idea is, the danger is the pig's-pail. Hotels take a lot of that milk. I do not know about private houses; I do not know what the dealers do, but milk slops go out to the kitchen and get chucked into the pig's-pail, and away it goes.

832. With regard to disinfecting these hides again; although I quite understand what you say, that the danger of foot-and-mouth disease is not so great as of anthrax, still, when there has been in the hold a large consignment of these heads, it is quite a possibility that if they were unloaded, and then the ship were loaded up with cake and different feeding-stuffs, they would get some infection on the bales, would they not?—With green hides; only with green hides.

833. I mean the hides as they come over?—They would be coming from places very near at hand; the others that come from a distance are dry hides. They come as dry hides and wet hides from a distance.

834. Wherever the hides do come from, which are a source of danger, it would be as well to disinfect those ships, I mean before you put in the feeding-stuffs?—Yes.

835. (*Mr. Morrison.*) The Regulations are put into force at once when a report has been made. In a good many of these recent cases where you have had the disease spreading from one place to another, have you been able to form a theory in each case as to how it has spread?—I cannot say in every case, but generally. I think I told you about the Ripon case. It certainly blew across the road. In the Middlezoy, the first Somerset outbreak, the people there have very small holdings, and in one day they will have their cattle on two, or even three, different pastures; that is, in the morning they will be here; they have another field a mile away perhaps, and they will be there in the afternoon. They all went through the same village to get to these pastures, and a great number of them passed the infected steading and they got infected on the road, and a great many of the secondary outbreaks arose that way. Then, of course, there were the others, so that we had to use our brains and try to find some additional origin, and we found the waterways.

836. Had you any one case where you suspected human agency inadvertently or in any other way transmitting the disease?—Well, in the second Somerset outbreak, and some of the others, before advising to cut out for slaughter, that is, the cattle that were away some distance and not likely to be directly attacked, I had information that the same attendant had been to these cattle. The inspectors on the spot under similar circumstances have also had information that a man who had been attending sick cattle had been attending others which became diseased.

837. Was anything in any one of these cases done in contravention of your Regulations which caused this spreading? Were your Regulations always strictly carried out?—From my recollection they were, but of course it would be better to get that from Mr. Smart. I think the general idea is that we were all generally satisfied. We really felt that in all these outbreaks the farmers and every one concerned had thoroughly played the game. That was in the matter of foot-and-mouth disease.

838. I wanted to get out if there was any possible means, whether through ignorance possibly, or in any other way, by which a human being would carry the disease, or had carried it; whether they had done it?—I do not think that they had done it.

839. Supposing it had happened through carelessness, have you any penalty you put upon a man who does not carry out your Regulations?—What can you do with a yokel who goes to attend a case that he does not know anything about, and then goes off to another? He cannot know.

840. No, but if he had got instructions from the veterinary surgeon on the spot and disobeyed those instructions?—Oh, he can be penalised.

841. (*Mr. Field, M.P.*) It is before the veterinary inspector goes there that the damage is done?—Before

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we get hold of it. After we get hold of it there is very little to complain of from our point of view.

842. (*Mr. Morrison.*) As I understand, the only people who are instructed to report a case are the owners of the stock?—The person in charge, the representative of the owners.

843. Supposing a knacker or somebody else who handles the stock somewhere else finds symptoms of the disease, he is not supposed to report it?—We would talk to him if he did not. There is no penalty. The veterinary surgeon is bound to report under penalty. He gets half-a-crown for his report, and is liable to a penalty if he does not, and the owner is bound to report.

844. But not the slaughterer?—Not the slaughterer.

845. Would it not be an advantage if you had that?—Oh, yes, I think we should enlarge the compulsory reporting.

846. It is rather strange to find you saying you think that milk is perhaps the most dangerous source of infection, and yet, as far as I can make out, you have not a single instance where you suspected milk as being the means?—I am not prepared to say altogether that the Hounslow outbreak was not due to milk.

847. But still you are not sure about that?—No, I am not sure about it. Remember, we have had very few initial outbreaks. I have had to sit down and theorise on these things; possible origins based on the knowledge we have of the disease. We have very very few cases to build up an argument upon when all is said and done. We have far more than we want, but when you want to build up an argument and accumulate evidence you want 200 or 300 cases.

848. But it would be a very simple matter to enforce pasteurising all milk before it came to this country?—I should think it could be done.

849. But it would be quite easy to enforce it?—I think so.

850. And you would recommend that?—Yes. I may say that although the Continental people scoffed at our Hay Orders they have all been making Orders against each other, and it seems to me a little ridiculous. Their countries are simply full of the disease; they are now making Orders about the importation of hay.

851. (*Mr. Field, M.P.*) Against one another?—Against one another, when their country is laden with it, as it were. One of the things that Belgium has done is that they allow no milk over their border unless pasteurised, unless on transit, and if on transit it has to be locked up, and go through in the train.

852. (*Mr. Morrison.*) Now as regards hides of calves, you recommend that hides should be disinfected at the port of embarkation, and that calves should be inspected and certified as coming from a clean farm; and I suppose you would have British officials seeing that that was properly done at the port of embarkation?—I do not know that I would go so far as that. I believe that the Dutch services, as regards dead meat, and the Danish are done very strictly, and very conscientiously. They are done to protect their own trade, not simply for our protection.

853. Do you think you could safely take a certificate from men employed who are not of our own nationality, anywhere on the Continent?—Yes, I think from a Municipal or a Government slaughter-house.

854. Do you not think these men could be got at very easily by people who had large interests to serve?—Well, they might, but I am afraid our own men might be got at just on the same principle, you know.

855. I was just going to ask you have you ever heard of our own officials having been got at in India when the New Zealand Government put in an order that all bones had to be properly disinfected before being imported into New Zealand, and then they had to stop them because they could not trust their own men; after a while they were not their own men?—Their own men? I would not take any certificate from an Eastern official. They do not consider it wrong to take a bribe; it is part of their living.

856. But the same thing happened in Australia where they were all British-born. Now, in view of that, do you not think if you carried out the system of inspection and certificate that you would require to

send our own officials?—I do not think so. I would like to have a check on them by seeing the heads and the feet on the carcass. But I think with that check I would be prepared to accept an official certificate.

857. You would like the head and the feet sent over here for our own officials to inspect them after they arrived?—I think that would be a very great safeguard.

858. You would supplement it by that?—You know these Municipal and Government inspections, especially the Government ones, are done for the protection of the trade, and it is ruin for any man to be got at. Of course, I do not say it is impossible that they could not be got at, but I am convinced that the Governments would not stand it.

859. As regards the scientific side of the question, I think from your evidence that it is clear that a great deal remains to be learned; for instance, you have not got the bacillus yet?—No.

860. Is there anything in the fact that the bacillus had been discovered on the Continent lately?—No. He has discovered a visible bacillus, but clearly you can filter the virus, and if anyone comes to you and says, "I have got an unfilterable organism that causes the disease," he has made a mistake. They have not accepted that discovery seriously.

861. But I suppose you consider it quite a likely thing that some day you will find the bacillus?—Well, of course, that is a big thing. We will find it, but it will be the establishment of an era. Koch and Pasteur established an era when they showed that these microscopically visible organisms could be cultivated artificially. Since their day the invisible virus has been found, and no one has yet established the era when the invisible organism can be cultivated. But it will happen. We have a reasonable hope; there are a great many men working at it.

862. But still it is a very difficult question?—It is one of the most difficult bacteriological questions of the day.

863. There are other difficult questions waiting investigation. For instance, you thought it likely that birds, in their intestines, carry the disease, though themselves unaffected by the disease?—I think that could be settled one way or the other by experiment; I see no difficulty in settling that by experiment.

864. And then there was the other question, too, of the extent flies are dangerous?—I do not think that is a very difficult question to settle either, experimentally.

865. If you could settle these questions you would have extremely useful knowledge, would you not?—Then, of course, you would be met with the question what are you going to do—shoot all the birds and kill all the flies out?

866. One always must admit you really do not know the question until you know the scientific facts at the root of it?—That is so.

867. That being so, if you could discover a place where it would be safe to set up an experimental station, would you be inclined to advocate it?—Personally, I should be. Nothing would give me greater pleasure than to do it. I thirst to investigate the thing. As I have said, I have come back to my laboratory prepared to make a laboratory experiment, and I have said to myself I will deserve capital punishment if I do this, and I have chucked my stuff into the destructor. But if we could get a place it would give me the greatest pleasure to do it.

868. What is the difficulty about getting a place, an island far enough away from our own shores on which no one objects to our setting up an experimental station, why should he not do it?—It could be done.

869. Then it is quite a feasible proposal that such an experimental station could be set up somewhere?—If you allow me to make the proposition, I would say take an island somewhere and get all the other Governments interested, let them send representatives, do not let them make importation Orders against each other, let them all be in the swim.

870. Really you are in favour of an experimental

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station if it can be done with safety?—If it can be done with safety.

871. And you see really no insuperable difficulty about bringing that about?—Well, I would not like to say that. They have agreed to have experiments done in India, you know.

872. You admit that it would be quite safe in an island in mid-Atlantic if you could get an island far enough away from anywhere?—Yes, I think it would be quite safe.

873. Would it be quite convenient so far away from us; could you carry out your experiments in such a place?—It would be costly, and I think what you would want would be really two islands; that is, have your waiting cattle not under experiment on one, and another for your cattle under experiment.

874. Then in the same experimental station could you not treat other diseases or investigate other diseases such as anthrax and swine fever and other things of the sort?—That is very much better done here; that we do, of course.

875. There is no necessity except for this extremely infectious disease?—Yes, unless they wanted to do cattle plague as well. It is better not to do two very contagious diseases at once—you get your experiments mixed up.

876. Have you ever come to discuss the question of administration on the Continent, a common system of administration? It would be a question that might also be discussed as to whether you could not have a common experimental station somewhere. Evidently France and Germany had the idea and had to abandon it?—Well, Germany has got one. They shut their stations up, and in 1909 the Prussian Minister of Agriculture announced that he would provide the money for fitting up an island off the coast, but so far as I know, nothing has yet been said about the work publicly. That was begun, because it was announced at the Hague Conference. It would not be announced at a place like that without they meant to carry it on. I think the thing is going on there, but they have published nothing.

877. The Germans, then, are of opinion that it would be safe to establish such a place on their own coast?—So it would appear. The reason that they have established it is that their country has been riddled with the disease.

(*Mr. Field, M.P.*). But they have foot-and-mouth disease, and you have not. That makes all the difference.

(*Mr. Morrison.*) We have it, too.

(*Mr. Field, M.P.*). Not to the same extent.

878. (*Mr. Morrison.*) Another point. In some countries I know, especially in our Colonies and the United States, where they have a difficult problem regarding disease, they very often appoint a specialist to take up the problem and devote three or four years to the problem and do nothing else; give him a free hand and let him do the work, and he practically may devote his life to that one problem. Considering the importance of foot-and-mouth disease to us, would it not pay us in the long run to get the very best man we could and set him to work. If we had an experimental station he could at least make a special study of all the conditions at home under which the disease starts?—You mean marooning him?

879. If you send him to an experimental station he could surely be taken off if he took the usual precautions to leave off his clothing and disinfect himself properly. But even supposing you had not an experimental station just to begin with, would it not be a thing that would perhaps pay itself if you appointed an extremely good man to investigate foot-and-mouth disease at home under the conditions where it occurs or, perhaps, of course in India or Germany, wherever you could find it?—You mean on farms?

880. I mean wherever he could find it in the world?—But he is simply to investigate it on the farm clinically as it were?

881. I think under every aspect?—Experimentally?

882. In every aspect as far as he can?—But if you mean experimentally, objection comes in as regards this country at once.

883. You could not give him power, of course, of inoculation and that kind of thing, but he might, perhaps, find out something in the course of a lifetime which would be extremely useful to us, or half a lifetime, or a few years, if he did nothing else?—If he had a private station and worked at it I have no doubt of it; but in this country if we get an outbreak we knock it out; and that will be the system that will be carried on until we find the means of keeping it out.

884. We admit you knock it out, and you do it very well, but you cannot keep it out. Now this man will be out for work on the whole problem of keeping it out?—He would have to experiment.

885. But not to too dangerous an extent?—I think he would require to experiment to a dangerous extent.

886. You would require to give him an experimental station?—Yes.

887. (*Mr. Field, M.P.*) I will not keep you long, because all the questions I wanted to ask have been anticipated. I want to ask you why you consider that the three kingdoms are immune from foot-and-mouth disease?—Not immune.

888. Yes, practically immune, and provided it was not imported here in this country?—The main factor for producing a widespread outbreak is excluded; that is, the admission of animals to go all over the country. I think that is the reason.

889. Now, in your experience, did you ever find certain breeds of cattle are not so susceptible to foot-and-mouth disease as others?—Well, I do not think any of the breeds in this country are, but certainly in India there are resistant breeds, and that results from them having been decimated, as it were, by the disease for years.

890. Is it your experience that pedigree and practically over-fed cattle take foot-and-mouth disease more easily than others?—No.

891. It is not?—They probably suffer more; they suffer more severely.

892. They suffer more severely?—And lose more flesh.

893. And would not recover so soon?—No.

894. Did you ever hear that the Irish cattle, the Kerrys, practically never take this disease?—I never heard of it.

895. Then it is not your experience that one breed of cattle is more likely to take it than another?—No; with the exception that a breed of cattle that has been decimated for years is not nearly so susceptible.

896. Because those that are likely to take it died out and left the hardy ones behind?—That is one reason. It does not spread so much in cases where you have a large number of immune animals. Often you get a barrier of immune animals past which the disease cannot come.

897. Did you ever think whether moss litter ought to be considered as a means of conveying the disease, say from Germany, whence a great deal of it is imported?—Yes, we have considered that, but I think it only comes under the indirectly contaminated materials.

898. It is used for horses a good deal for litter?—Yes.

899. I do not want to go over the questions which have been so frequently asked, but I will take just two or three points which have struck me. I will not detain the Committee because our time is up. It was mentioned by Mr. Anstruther that with regard to the sheep's heads and feet in which there is a considerable trade done with the Continent, I think some in the Veterinary Department considered that they were a fruitful means of conveying the disease. What would you think of that?—I should not say a fruitful means.

900. Well, probably I should say possible?—I should place them amongst the dangerous articles.

901. Would you consider that this Committee—now I want you please to consider your reply to this—ought to make a recommendation that hides and wool practically too should be disinfected before being brought into this country, so as to prevent anthrax, because, apparently, you consider that there is not so much danger with regard to foot-and-mouth disease, being introduced?—Well, of course, for me it is very difficult to say whether the game is worth the candle, but I am

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prepared to say this, that as regards anthrax you will remove a very important factor in the importation of anthrax by having the hides disinfected before they are shipped.

902. Of course you are aware that anthrax is not alone dangerous to the cattle; it is absolutely fatal to man?—You can cure it, but, of course, it is a very dangerous disease.

903. Of course it can be cured, but there have been several fatal accidents during the past year, and for many years past?—Every year.

904. With regard to anthrax from the men handling these infected hides, and even from wool. A case came under my own notice, that makes me so importunate upon this question?—Yes.

905. You say you have not sufficient power with regard to inoculation; that you should have the power to order and to prevent inoculation?—Yes, as a general measure.

906. I am not going into the details about this experimental station, except to say that I entirely agree with what my friend here on the right has said. But I do consider that unless some agreement can be made with the other nations, you can hardly carry on the experimental station properly?—Well, that is my feeling in the matter.

907. If you had an experimental station, say in any part of England or in any part of the United Kingdom outside on an island, immediately you introduce the foot-and-mouth disease there is an Order against your export of pedigree stock?—Certainly.

(*Mr. Morrison.*) That is not my proposal.

908. (*Mr. Field, M.P.*) I did not say that was your proposal; I said I agreed with you. Well, I understand the French and the Germans claim—I do not agree with them—that they have made more experiments and that they are further ahead in veterinary science than we are here. I do not agree with them, but at the same time I want to know how it is that they have so much more foot-and-mouth disease. Is it, in your opinion, in consequence of the want of central authority and administrative action?—That, I think, is at the root of the matter. It is the central authority which lays down a plan and sticks to it and goes to the spot to fight the disease. A central authority does not ask anybody to carry out the same regulations; they go and do it themselves. But, with regard to the other part of the question about their information, their scientific experiments, they have done a tremendous lot as regards hydrophobia and rabies, but we are the only people who have stamped it out, and the same nearly applies to foot-and-mouth disease.

909. Yes, I know, so that although they may have more scientific—I do not agree that they have, but they claim to have—knowledge, although they may have done more experiments and spent more money on them, yet owing to the lack of central authority which has really jurisdiction all over the three kingdoms, you have been able to accomplish more?—Yes; but my view about the experiments is this: I agree at once that all the Board's and others' restrictions are an abominable nuisance to the farmer, a necessary nuisance, and that the idea of having an experimental station is to try to get at it just as efficiently in less objectionable ways, but until these less objectionable ways are discovered we must stick to the objectionable way.

910. Can you tell me from your knowledge whether these foreign Governments slaughter the cattle, or adopt the same means that you do to extirpate foot-and-mouth disease? They do not, I should think?—They have the power in Germany, and as I think I said at an earlier part of the meeting, but they have always found it too big a thing. They have now the power in France. They have the power in Denmark and they have used it, and they have used it to some advantage. In France they have asked for the power from Parliament, and I think they have got it by this time; I saw in one of the journals that a Bill was before Parliament. In Holland they have had the power for years; they have never used it until this outbreak. As I have said, they are exceedingly pleased with the results, although this country would not be pleased with them if the Board of Agriculture

produced them. But still that is a tremendous drop from 4,391 outbreaks in Holland in October to 1,089 outbreaks in November.

911. The fact is that the financial difficulty is so great that they are afraid to face it—something like the tuberculosis difficulty in this country—is not that it?—Yes, in Germany.

912. They know it is the right thing to do, but they can hardly afford it; is not that about it?—That is it.

913. There is only one other question I wish to ask you, because I do not like to keep the Committee. Is it your opinion that this Departmental Committee should make some recommendation that some common action should be taken by the Governments of all these countries, so as to have concerted action in regard to these diseases; all cattle diseases, but more particularly foot-and-mouth disease which is so infective?—Well, I think it is well worth considering that that should be done. But there is this objection to it, that suppose they agree, and then say, "Very well, now we will agree to do what you do; you lay down the law, but you must take our cattle without any reservation." There is that risk about it, you see.

914. Of course, you cannot do anything without a risk. The smallest action in life is always accompanied by some risk, but it would be worth trying?—I think it would be well worth trying.

915. Is it your opinion, that, in view of making such a recommendation and in view of the fact that any such co-operative action would be useful to them as well as to us, there would be a likelihood of it being carried into effect?—I do not know about the likelihood of it being carried into effect, but I am quite convinced that it would be useful to them, if they would adopt our methods.

916. And you agree with me that we ought to make such a proposal, as a tentative proposal and a practical proposition from this Committee?—Yes, I think that would be quite a practical proposition.

917. The reason I ask the question—I do not wish to detain the Committee—is, it appears to me that so long as there is such an amount of foot-and-mouth disease, particularly in the European countries, and so long as, under the Free Trade system we continue to import an enormous quantity of all kinds of goods which may be the medium of infection, so long as the seat of the disease, the root of the disease is in the Continent, unless we have some common action, we are not likely to get shot of the disease?—Yes, that is so.

918. You agree with that?—Yes, I say this though, that we are much freer than any of the other countries, and it does help our exports. The other countries take our cattle with less quarantine, and they do not so frequently put quarantine in force against us as they do against the Continent. If we could keep free and keep the others saturated with the disease it would be all in our favour.

919. That is an uncharitable view to take of it. And, in addition to that, you say you are keeping the root of the disease practically going, and you are never sure when it may come along?—Oh, I quite admit that, I said that in my patriotic selfishness.

920. The reason why I am so insistent about it is because I have a very bitter recollection of the time—29 years ago—when we had the foot-and-mouth disease in Ireland. It dislocated trade and nearly practically starved the inhabitants. Markets were closed, everything was upside-down, we lost millions of money, and the whole thing was in chaos. As long as you have the root of the disease in the Continent, you never know when it is going to come again?—Well, I doubt if such a bad state of affairs will occur again, but I would not like to prophesy.

921. (*Chairman.*) You will have to come again, Mr. Stockman?—There are two other points the Committee might like to think over. Somebody raised the question as to whether the disease was always prevalent on the Continent, when we got it here. That is so. I went into that back into the eighties. And the converse arose, did we ever get it here when it was not on the Continent. I have gone into that too, and in 1902 it went down on the Continent, and it was in 1907 that

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it came up again and we got it here in 1908. That works out by the figures.

922. (*Mr. Bathurst, M.P.*) In the particular period between 1902 and 1908 there was comparative im-

munity, was there?—France was quite clear of it in 1902.

923. (*Mr. Nunneley.*) Very few on the Continent and here none?—Yes.

The Witness withdrew.

Monday, 12th February 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (*Chairman*), presiding.

Sir CHARLES D. ROSE, Bart., M.P.

Sir HARRY VERNEY, Bart., M.P.

Sir J. BOWEN BOWEN-JONES, Bart.

Mr. CHARLES BATHURST, M.P.

Mr. WILLIAM FIELD, M.P.

Mr. RICHARDSON CARR.

Mr. E. E. MORRISON.

Mr. E. M. NUNNELEY.

Mr. W. H. F. LANDON (*Secretary*).

Mr. S. STOCKMAN, M.R.C.V.S., Chief Veterinary Officer, Board of Agriculture and Fisheries, recalled and further examined.

924. (*Chairman.*) Now, Mr. Stockman, there are just two or three questions I want to ask you before you go on to the last two paragraphs in your précis. I rather gather from the evidence you gave in answer to two members of the Committee that you consider there is a great deal more to be found out about foot-and-mouth disease?—That is so.

925. And that if money could be procured from the Treasury, you would be able to do real good work?—I think, sir, that there is a great deal of work to be done and that with funds a certain amount of that work could be resolved by experiment. Of course, as we all know, there are certain things you cannot resolve experimentally; it must be by cumulative evidence, but there are certain things that I think could be solved experimentally.

926. Now, you have been asked a good deal about an experimental station, and you have given your evidence about that. What I should like to know from you is this: Would that be met by this scientific Committee which the President has appointed and which is going, as I understand, to sit in India? Would they be able to do the work which would be carried out on an experimental station; would it not be able to be done in India?—Oh, yes. I have drawn out for the President a memorandum on suggested practical experiments. I have avoided the academic questions altogether—which could be carried out in India—and I have also advised that they should go to a part of India, both for the protection of India and to make the experiments more correspond to this climate, where the climate somewhat resembles this country; in fact, up to the hills, and I think there they could do some very important experiments. The experiments on the duration of virulence, of course, might be influenced by the climate and locality. I do not know that it would be quite right to apply what occurs in India to what would occur in this climate with regard to the duration of virulence, but that remains to be seen. If the results correspond with our observations in the field here, I think we would be able to accept them in confirmation.

927. Quite so. Is it known when the scientific Committee starts its work out there?—Well, that has not been decided yet.

928. That has not been decided?—The President is still thinking over it, and what the constitution is to be and who is to go, but the Government of India have agreed to allow the work to be done there, and they have also nominated a man to represent them to serve on it.

929. They have agreed to it; the Indian Government have agreed to it?—They have agreed.

930. Well now, I want to ask you a question as regards these imports. I gather that you think at the present time, the hides and the sheep's heads are the

most dangerous imports from the Continent?—Hides, sheep's heads, feet, and milk, I should say.

931. These are the most dangerous?—But, qualifying it by the fact that the actual risk is, to some extent, theoretical; we know that it could occur.

932. But these are the most dangerous?—These are the most dangerous to my mind.

933. I rather gather that you would suggest that if any action were taken, they should be disinfected at the port of embarkation rather than at the port of landing?—Yes, that is so; I think all disinfection should be done at the port of embarkation.

934. Now, would there be any difficulty in disinfecting at the port of embarkation, do you think?—I cannot see that there would be any difficulty except over sheep's heads.

935. (*Mr. Field, M.P.*) The expense?—I do not think that there would be any very great expense.

936. A little expense?—A little expense.

937. (*Chairman.*) But it would be a great safeguard, would it not?—I think so.

938. Well now, I want to ask you a question about your own profession. I understand that when there is a suspected outbreak the local veterinary surgeon decides whether it is a case of foot-and-mouth disease or not?—The local authority's veterinary inspector?

939. Yes.—He does in theory; as a matter of fact he often does not; he often decides only that it is suspicious enough to report. We had one report, for instance, on Thursday last. It was reported by the police; and that very night, although it was dark, we sent an inspector down, because we say he may go there in the dark, for, if it is a typical case, and the animals are smacking their lips and all this sort of thing, he can take a lamp and diagnose it, and it gives us a whole day next day to work. However, he did not manage that on the Thursday night. He went to the farm on the Friday morning, and he found that it was not a case of foot-and-mouth disease, but in his report he said that the suspicion was quite justified.

940. Yes, but what I want to get at is this; there are cases when there is a local veterinary surgeon called in, who will say if it is foot-and-mouth disease or it is not; he can take it on his own responsibility; is that not so?—Oh, yes.

941. What I want to get at from you is, do you really think that some of our local veterinary surgeons, excellent men as they are, know really what foot-and-mouth disease is? I will tell you why I ask you. It is because there is a feeling about that some of our local veterinary surgeons, when they are called in, do not really know foot-and-mouth disease?—Well, the difficulty about foot-and-mouth disease, as I explained in an earlier part of the meetings, is not so much to say it is foot-and-mouth disease, as to say it is not, and

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what I find in connection with foot-and-mouth disease and every other disease is that there is over-reporting, because they will not take the risk of missing a case.

942. They will not take the risk?—They have been circularised, and the local authorities have been circularised, that when they are in a difficulty of that kind they have only to wire to the Board or telephone to the Board, and an inspector with experience of the disease will be sent immediately to confer. And, during the last three or four years, that is what has happened in every case. But I would like to say this, that in most cases, at least, which turned out to be foot-and-mouth disease, we have had a pretty strong hint from the local veterinary inspector that it was so. There was one mistake, certainly.

943. (*Mr. Richardson Carr.*) There was one mistake?—There was one mistake.

944. (*Chairman.*) Then you do not, in your opinion, think there has been any danger in the past that certain local veterinary surgeons when called in have diagnosed the disease wrongly; that they have passed a case of foot-and-mouth disease which turned out afterwards to be the disease?—I am certain that no case has occurred in which anything of that kind has happened, except that failure to diagnose the disease locally has perhaps delayed the diagnosis a day; but the detention notices have been served. I might add that it is not a disease that can be kept quiet long; if a man did let it away we should hear of it somewhere else.

945. Well now, as regards these regulations abroad, I think I understood you to say that the veterinary profession would as far as they are concerned, welcome uniform regulations?—Yes, I think they would; I think they would agree on them very readily.

946. But the difficulty would be in the carrying of them out, I suppose?—In the carrying of them out, yes.

947. Could you make a definite suggestion regarding the best way to bring about international uniformity in dealing with foot-and-mouth disease?—Well, I would suggest this, that, in the first instance, the Committee might consider recommending to the Foreign Office that this question should be included on the agenda of the International Veterinary Congress that is to take place here in 1914. The Foreign Office will issue the invitations to the foreign Governments to send delegates, and I am quite certain, if in these invitations they expressed such a desire, that the permanent Commission would listen to it, and give effect to it.

948. That would do away with the fear they have in this country that if we got all these legal regulations all over Europe the same, they might say: "Well, 'if we stamp out foot-and-mouth disease, then you 'must let our animals into your ports'?"—Yes, and I think that is a great danger; I am frightened of that danger.

949. Is there any law to prevent an individual bringing a dangerous virus into this country and using it for experiments on animals, or for the manufacture of vaccine from animals?—No, there is not. The fact is that any man, if he liked, could import the virus of foot-and-mouth disease, and start to experiment with it in this country. And further, a man who wanted to manufacture vaccine, who might have been told to go out of his own country as they would not have it there, could come over here and start the manufacture of vaccine. He would have to incur this risk, however, that after he had set up his establishment the Government might step in and say: "Now, go away; you have done us a lot of damage." But the damage would be done before that would take place, and then, of course, we might find ourselves in the position of having to compensate a man for his plant after he had done a thing he never should have been allowed to do.

950. Then, is it possible that outbreaks of disease amongst stock could be started from careless handling of such virus?—I think that is possible.

951. Would you advise that such work should be either forbidden or restricted?—Well, it certainly should not be forbidden. It does an enormous amount of practical good, and advances our knowledge of disease, but I think in reference to all contagious diseases it

should be done subject to restrictions, which would prevent all risk of dissemination of disease.

952. Could that be done without seriously interfering with this important kind of work?—Yes, I think it could. There are viruses, of course, like foot-and-mouth disease, cattle-plague, sheep-pox, and some others, which I think should only be handled by express permission of the Board, and under very exceptional circumstances, but there are others which present no danger whatever, provided certain small precautions are taken.

953. What precautions? Would they create any hardship?—I think not. They would consist chiefly of seeing that the premises and fittings were suitable, that infected animals were isolated from others, and that animals which had been inoculated with certain viruses should only be allowed to leave the premises alive under certain conditions, even after recovery or after apparent recovery.

954. Then do you suggest there is any carelessness in handling inoculated animals at experimental stations or elsewhere?—I do not suggest it in regard to experimental stations, for I am sure that most of the workers would take all the precautions known to them, but I do feel that a department like the Board should have the right to insist on such precautions being taken, if they think it necessary. As regards preventive inoculation of animals in practice, however, a good deal suggests itself, because it is well known that vaccines like anthrax, blackwater, and swine-erysipelas, to which risk attaches, are sold by firms without control to anyone who cares to buy them, and even more dangerous vaccine viruses could, and would be sold in the same way, if a demand arose for them.

955. Well now, there is one more question I want to ask you: Have you heard of the resolution which was passed by the Irish Shorthorn Breeders' Association about Dr. Siegel of Berlin having found out the microbe which produces foot-and-mouth disease?—Yes, I saw that.

956. Have you taken any steps about it at all, to make inquiries or anything?—Well, I have inquired by the reports in the journals. It is not taken seriously.

957. It is not?—It is not taken seriously.

958. Well, I am bound to ask you because it is from the Irish Shorthorn Breeders' Association, and they sent it up to this Committee. Therefore, I want to have your views upon it?—No; I have already explained that he attributed it to a visible microbe, whereas everybody knows that it is a filtrable virus.

959. (*Sir Charles Rose, M.P.*) Are you kept informed of all researches, the result of investigations in Germany?—I cannot say that I am kept informed, but I keep myself informed. The Board supplies me with every journal of note. I have only to put in a note that I want such and such a journal, and the Board order it for me, and these all come regularly and I go through them as far as time will permit.

960. (*Chairman.*) You have seen these reports?—I have seen them, sir.

961. (*Mr. Field, M.P.*) Surely, if there is anything in this discovery there is ample field in Germany to test it; apparently they have enough of foot-and-mouth disease?—That is always the test that I put for quack remedies here. If they ask to experiment with them I say, "Will you go over to Germany or France and 'try there?' If it is a cure or preventive as you say, 'they will welcome you, and I have no doubt if you 'come back here with it proved, the Government will 'give you a very handsome reward.' They never do it.

962. (*Chairman.*) Well now, I see you have been asked by the Secretary to discuss the vaccine lymph in relation to foot-and-mouth disease in the United States of America in 1908. Perhaps you will give the Committee the principal points upon that?—Well, the Secretary informed me that I was expected to do this. He did not send me the official report, but we had it in the office. I understand, however, that the official report is before the Committee.

963. Is there anything in that pamphlet that you want to give any evidence on?—Well, I would like to say

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this, sir, that it is one of the methods of introducing disease to which very serious theoretical risk is attached. I cannot come to any other conclusion on reading this report, and it is one of the questions that I have put forward for investigation in India.

964. It is not so much for this Committee; it is more a scientific investigation?—Well, I do not know altogether about that, sir, because what I feel is this, that that vaccine lymph for commercial purposes is imported into this country, and it is brought into contact with animals, and my feeling is that there is no risk attached to doing that if they take proper precautions; I mean it could be done as often as you like if they take proper precautions; but I do feel that these precautions should be taken, and that every manufacturer of vaccine lymph should be compelled to take them. That is really my opinion.

965. (Mr. Field, M.P.) He is not obliged to take them at present?—He is not obliged to take them at present.

966. Under the existing condition of the law?—That is so.

967. (Chairman.) Could we have these reports?—Well, I will try to get a number of them. I have drawn up a memorandum on the outbreak which explains the principal points, and I will hand that in and leave it to the Committee to say whether they will insert it in the evidence or not. It will at least serve as a guide to each member of the Committee, in reading the report. He would need this guide, I think, on reading that report of fifteen pages.

968. I think the Committee would like that to be inserted in the minutes?—The disease was first reported on the 10th November 1908 amongst two car-loads of cattle which had been dispatched on the 26th October from the stock-yards of East Buffalo, New York, to Watsonstown and Danville, Pa., and from these points the disease was distributed to nine separate farms. No foot-and-mouth disease had existed on the North American Continent since 1903, when a few cases occurred at a farm where animals used for the study of vaccine lymph were located. This outbreak, however, had been speedily stamped out. In following up the possible origin of the outbreak, information was received on the 22nd November from Detroit, Michigan, that a mild type of foot-and-mouth disease was prevailing on several farms in the vicinity, and this was confirmed. It was further discovered that amongst the affected animals at Detroit there were 21 heifers which had been used by Manufacturer A. for the production of vaccine lymph, and that these were amongst the first to show symptoms of the disease. The 21 cattle were purchased in September by a firm who had a contract with Manufacturer A. to furnish animals for the preparation of vaccine lymph, and take them back after the lymph had been prepared from them. The 21 heifers were vaccinated on 21st September and 6th October and returned to the farm on 16th October. They were driven to stock-yards belonging to the Haley Commission Co., Detroit, on the 16th. They occupied certain pens at this stock-yard for about two hours, and were then taken to a town 15 miles away, and dispersed. Inquiry brought out that they developed foot-and-mouth disease on the 18th October, after they had been distributed to certain purchasers. 32 cattle which had afterwards occupied the pens at the Haley Commission Company's sale-yards on 20th October, but which were not sold, were sent on to East Buffalo on 23rd October, and seven of these were amongst the consignment—two car-loads—sent to Watsonstown and Danville on the 26th October. It was believed to be these animals that started the outbreaks in the New York and Pennsylvania States. It is to be observed that the heifers vaccinated on 23rd September and 6th October were not discovered to be affected with foot-and-mouth disease until 18th October, which would mean an incubative period of 23 to 25 days in the one case, and 10 to 12 days in the other. The period of incubation of foot-and-mouth disease is usually much shorter than this—three to six days—but cases of 10 days' incubation have not infrequently been observed, and incubation periods of 15 to 18 days have been recorded. A long period of incubation in connection with this virus need not excite much comment,

as it was certainly a very mild virus. It may be noted further, however, that it is highly probable that the incubation period in this case was in reality much shorter than a mere consideration of the dates brings out. For the purpose of preparing vaccine lymph from calves a considerable area of the skin over the animal's chest is scarified, and the seed vaccine is rubbed into the scarifications. The animals are then tied up for a variable period, so that they cannot reach the wounds with the tongue. If foot-and-mouth virus be inoculated subcutaneously to susceptible animals, a large number of them do not become affected with the disease; that is to say, the virus often fails to infect by the hyperdermic method of introduction. The disease is easily conveyed, however, if the virus be introduced by way of a mucous membrane, such as that of the mouth. So long as the calves whose scarifications were infected with the virus of foot-and-mouth disease along with that of vaccine lymph (cow-pox) were tied up tightly by the head, they would be unlikely to contract foot-and-mouth disease. Once their heads were free, however, that is to say, when they were released from the establishment, it is practically certain that they would lick their own scarifications, or those of others, and in this way could bring the virus of foot-and-mouth disease in contact with the mucous membrane of the mouth. It would appear then, that the incubative period of the 21 heifers need not be reckoned from the time they were inoculated on the skin for the production of vaccine virus, but might be rightly reckoned from the day on which they licked their sores. That would probably be 10 or 12 days after they were first vaccinated. Some of the animals, however, might have been suffering from foot-and-mouth disease on the 16th October when they occupied the pens of Haley Commission Company's stock-yards, or without showing symptoms they might have rubbed the contaminated wounds on their skins against the rails, and so infected the pens. The possibility of the vaccine lymph of Manufacturer A. being infected with foot-and-mouth disease virus was suspected. This was tested experimentally and found to be the case in respect of one strain of virus. The proof was obtained by inoculating animals, see p. 15 *et seq.* When following up the origin of this strain of vaccine lymph, it was found that Manufacturer A. had got the seed lymph (which was used in the first instance) from Manufacturer B., and that B. had been carrying on this strain through animals for a considerable time and never observed an outbreak of foot-and-mouth disease as the result of using it, but it was discovered that B. had been in the habit of killing all his calves immediately after the vaccine lymph had been collected from them; that is to say, before they had time to develop foot-and-mouth disease. Manufacturer A., on the other hand, hired his calves, and after the vaccine lymph had been collected, returned them to the owner, who either kept them or sold them in the market. Samples of the original virus were also obtained from Manufacturer B., and it was proved by inoculation experiments that this vaccine contained the virus of foot-and-mouth disease. The principal results of experiments with the vaccine lymph of Manufacturer B. are to be found on p. 24 of the Report, Calves 609 and 611. These animals were injected intravenously with 2 c.c. of the glycerinated vaccine under examination, which was a sub-culture several times removed from the strain of vaccine lymph originally imported into the United States of America. Both these animals developed typical symptoms of foot-and-mouth disease as the result of inoculation, and further, material from the buccal mucous membrane of Calf 609 was injected intravenously to Cow 375 (p. 18) with the result that Cow 375 developed a very typical attack of foot-and-mouth disease, and by co-habitation either singly or with the help of another calf (677), which had been inoculated with the vaccine lymph, infected two other animals—Cow 630 and Calf 614—which were placed in the same stable (pp. 19–20 of the Report). There can be no doubt that the disease produced by these inoculations was foot-and-mouth disease. There can also be no doubt that the experiments were done under conditions which rendered accidental infection from other sources impossible, and we are bound to admit that glycerinated vaccine lymph can

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be contaminated with the virus of foot-and-mouth disease, and that the activity of the latter in this condition may be retained for a long time. It is Circular 147.

969. (*Mr. Field, M.P.*) It was absolutely the cause of the outbreak?—It was absolutely the cause of the outbreak, and I would not like such a thing to occur here.

970. (*Mr. Nunneley.*) That was from the States?—Yes.

971. From the United States of America?—Yes. The same thing as goes on here; the seed-lymph is imported.

972. You are not sure that it has happened here?—I am pretty sure it has not happened recently.

973. (*Mr. Richardson Carr.*) How would it happen here?—From importing material; from imports contaminated with foot-and-mouth disease.

974-5. To people here who make the vaccine in England?—There are people here who make the vaccine in England.

976. How do you think it could be controlled? Does it come in any large quantities to England?—The importation could not be controlled, but the animal to which it was inoculated, after the lymph had been gathered from it, could be immediately slaughtered, never allowed to come into contact with other animals; whereas we know that certain men for cheapness hire their animals for inoculation, and after they have collected the lymph have sent them back and they may go anywhere, and that is my fear that some day we might get an outbreak from this cause.

977. (*Sir Charles Rose, M.P.*) I gather that by stamping this out, first by means of some arrangement with other Powers and by restrictions at the port of embarkation, a way may be found of really stamping it out of this country and keeping it out?—In relation to vaccine?

978. No, in relation to disease?—Yes.

979. By arrangement with other countries and by restrictions at the port of embarkation of the things?—Yes.

980. (*Mr. Richardson Carr.*) Do you think it possible in other countries? I know they can make good rules and regulations, but could they possibly be carried out do you think?—I think the disinfection of hides could be carried out, for example.

981. Yes, that could, but they could not tackle the slaughter question I suppose?—I think the sterilisation of milk could be carried out. In countries, you must remember, like Holland and Denmark, you have only to say to the Government this is going to destroy your trade, and they will put on extra men to see that regulation is carried out.

982. (*Mr. Field, M.P.*) You have formed the opinion that International co-operation could be arranged with regard to the prevention of the introduction of the seeds of disease at this forthcoming International Veterinary Congress?—They could make suggestions for acceptance.

983. Do you think that would be one of the most valuable results of this Committee?—I think it would be a very valuable thing if they could get the scientific men to agree on the professional way it should be done, and then hand it to the diplomatists and let them find out the best way to arrange it. Of course, I may explain that is what the Congress has always tried to avoid, indulging in anything political. They simply confine themselves to the best method of carrying a thing out, professionally speaking.

984. Is it your opinion that, in consequence of the enormous number of outbreaks that take place in foreign countries which have such intimate connection, through commerce, with this country, that it is introduced in some way through these different articles, and if the idea that you have thrown out was carried into effect, the danger would be considerably lessened?—Oh, I think we would have to admit that the danger would be considerably lessened if all took these precautions.

985. Of course, you are not a politician. I am to a certain extent, but I do not think there is any politics in foot-and-mouth disease. Now, with regard to veterinary surgeons mistaking foot-and-mouth disease;

as matter of fact, if foot-and-mouth disease gets up to a certain stage, anyone who knows anything about cattle can very easily identify it?—I think so.

986. It is only in the early stages that it ought to be possible for any common-sense veterinary surgeon to make a mistake?—That is so, but we have to consider this; that in most of these recent outbreaks it looked as if it had shot down from the sky or somewhere, and although a man felt that the symptoms were very suspicious of foot-and-mouth disease, he could not imagine where it had come from, and that did raise a doubt in some of their minds, but it did not prevent them reporting at once, except in one case.

987. Because they think it could not occur except through contact or something of that kind, and could not be indigenous?—Yes. Here is foot-and-mouth disease springing up miles away from everywhere, and no other cases in the country and none for years. I think a man may be pardoned a certain amount of doubt, if he says, it is very like it, but I cannot imagine where it could come from.

988. That would be true in the early stage of the disease, but there can be no doubt about it. I am not a veterinary surgeon, but I think I could identify foot-and-mouth disease at once?—I think there is no difficulty about diagnosing foot-and-mouth disease where it is well developed. As a matter of fact, the inspectors of the Board suspect it anywhere, because they have seen it crop up in these out-of-the-way places without any explanation; but you can imagine a man who has never seen foot-and-mouth disease saying: "Well, I am sure these symptoms are typical of foot-and-mouth disease, but I am not going to say it is foot-and-mouth disease, because I do not know where it came from; I will get one of the Board of Agriculture men down and see what he says."

989. To take the responsibility off himself? There is only one other question I want to ask, as I do not want to delay the Committee. You said something about these experiments in regard to foot-and-mouth disease and inoculation. Was there a case that occurred here through experiment? Has anybody experimentally inoculated cattle with foot-and-mouth disease?—It was done, I believe, in the seventies, by Professor Brown, but it was then all over the country. We were saturated with it, and so far as we know nothing occurred. It would have been very difficult to trace it if it had, because it was so rampant that a man might have got it from any of his neighbours, but it is an ascertained fact that in Germany it has escaped several times from the experimental station, and on that account they have closed their experimental station, and the French have closed their experimental station; they are all frightened of experimental stations for foot-and-mouth disease.

990. As a matter of fact it is not a fatal disease; you can cure it, but it takes a long time?—That is so. I have some notes here about the loss that may arise through foot-and-mouth disease, and if you like I could put them in.

991. If you please, because I was just leading up to that?—I may say that it is not a fatal disease. The loss is due to loss of condition, loss of milk, abortion, etc.

992. And general debility?—And general debility, and to a smaller extent, deaths. When it was in England the experts in respect of condition, etc., I mean the farmers themselves, men who took an interest in that, calculated that the loss was from 2*l.* 10*s.* to 3*l.* per head owing to loss of milk and condition. I got out of a journal that a similar calculation on much more particular lines, had been made in Hanover. I got it out of a French journal, therefore I will have to give the amounts in francs; it can easily be put in marks or shillings. In Hanover in 1897 observations were made on 14,454 cattle, of which 7,782 were affected. Loss of milk was calculated at 100,932 fr.; less the value of milk which was utilised, which amounted to 32,357 fr. There were 128 deaths amongst cows and 126 deaths amongst calves, the loss being in this respect 43,380 fr. Loss of condition was put down at from 18 to 75 fr. per head, and it amounted over all to 137,707 fr. From abortion they had 353 cases reckoned at 17,567 fr. Well, if you ask me about that I should say that prob-

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ably the abortion should come out of the estimate. We did not know then as much as we do now about abortion. I fancy foot-and-mouth disease may have had something to do with it, but I think it was mainly contagious abortion; anyhow it is a small sum. They reckoned the loss all over to come out at 2*l.* 5*s.* per head; and in the very virulent outbreaks they reckoned it at from 4*l.* to 5*l.* per head. I think this is fairly near the mark. They went into it very carefully.

993. (*Mr. Morrison.*) I was going to ask just one question: You mention that in India the Committee were to take up practical questions, and were to leave academic questions alone. What exactly do you mean by academic questions?—Well, of course, when you start an investigation there are questions that are to a scientific man of very great interest; he would like to know about them; but they are of no immediate practical importance. I grant you that 10 years hence they might be, and it is questions of that kind that I think in an inquiry, which is only going to last a few months, should be avoided. What one should do is to take the immediate practical questions that are of immediate interest and try to solve them. I might mention this, for instance: We do not know how to cultivate the virus of foot-and-mouth disease artificially. I think I have already explained that it was an invisible virus, and that it would establish a scientific era when somebody found out how to cultivate the ultra-microscopic viruses. Well, you can understand that to send men out to India to work on this question would be rather absurd, because it might take them 20 years or more, and that is the sort of question I want to avoid.

994. Then, I suppose you would agree that this investigation in India could not take the place of the experimental station that we have been discussing?—A continual experimental station? No; it is only going to last a short time.

995. (*Mr. Nunneley.*) With regard to the scientific committee that is going to proceed to India, what struck me, and it no doubt struck you, was this: you mention the experiments would have to be carried out as nearly as possible in a similar climate?—Yes.

996. Are not Indian cattle far more resistant to our disease than our English cattle would be?—No, not if you go up to the hills, that is another reason for going to the hills.

997. It has been in the blood there for a generation?—No; if you go down into the plains the disease has run about so much that the animals have acquired a high degree of immunity, both to foot-and-mouth disease and cattle plague. But when you go up into the hills it is a different matter. Herds are separated by hills; they will not go across the hills so readily; there is not the same communication, and if you want to get susceptible animals you must go to the hills.

998. You would get them there?—You would get them there.

999. In regard to these articles by which foot-and-mouth disease may be imported, disinfection is the chief means to prevent it. You could hardly disinfect hay and straw used for packing and things of that kind?—I think that would be impracticable.

1000. Then it would be a comparatively small additional safeguard disinfecting such things as you have mentioned. You could not disinfect corn, could you?—No; I think I have already said I do not see any practical way of giving an absolute guarantee that we will never be invaded.

1001. And by disinfecting all the things that you think you could fairly ask should be disinfected you would only get a slight additional safeguard, would you not?—I would not say slight; it is very difficult to estimate what we would get.

1002. Do you think now there is any real danger with the precautions you take of the disease escaping from you and spreading practically half over the country before you get hold of it to confine it?—I do not think so. I think if we keep up this method of flying down to the outbreak, and everyone taking his coat off and wiping it out, that it never could spread. But there is this to be said, that if it got into a market we might have 20 outbreaks in different parts of the country, and then our staff could not cope with it in

the same way that we can cope with one or two outbreaks.

1003. (*Mr. Field, M.P.*) As a matter of fact has not the plan been successful up to the present of keeping the disease isolated in one place?—Oh, I think it has.

1004. (*Mr. Nunneley.*) Well, Somerset was the worst case, you had more different outbreaks there than you had anywhere else?—Yes, and we got to it later than usual.

1005. Even there you stamped it out fairly well?—It did not go more than two miles. It was a very difficult country to work in, and we got late information of the disease.

1006. Have you any idea what the direct cost to the Government is of stamping out an outbreak now?—Oh, it varies. Quoting from a speech by the President, I think I could tell you approximately what these outbreaks in 1911 have cost us. It is something like 12,000*l.*

1007. (*Chairman.*) The whole of the outbreaks that would be?—Well, there remain certain things that nobody can calculate really, part time of men and that sort of thing, but in compensation and so forth.

1008. (*Mr. Nunneley.*) You would not include in that the loss to the farmers by having their cattle shut up for a time and that sort of thing?—No.

1009. You mean the direct loss to the Government?—The direct loss to the Government.

1010. 12,000*l.* for the year?—Yes; I am merely quoting the President's speech.

1011. How many would that be per outbreak; 1,000*l.* an outbreak?—That is an awfully difficult thing to determine. It all depends on the number of animals in contact, and the number of animals that we think might become infected, because, as I explained, that is the real secret of stamping out disease, not simply dealing with those on the spot, but if you see a likely line by which you suppose the disease is to spread or likely to spread, take no risk but kill the animals at once; that is worth 1,000*l.* even if they are not doomed to become affected; to do away with the risk alone is worth a lot of money.

1012. I was rather thinking what would be the cost of getting this disinfection carried out compared with the cost of the present system of stamping it out as soon as it shows itself?—Well, the way to get at that—I think that you would have to ask the Board for more accurate figures than I can give you offhand—would be to take each year in which we have had outbreaks, 1900 and 1901, etc., take the total cost of these outbreaks over, say, 10 years.

1013. (*Chairman.*) I think we had better ask the Board for that if the Committee like to?—I could not give you that accurately. I could not stand cross-examination on it.

1014. (*Mr. Nunneley.*) You have spoken of the loss as being 2*l.* 10*s.* to 3*l.* 10*s.* That is exceedingly difficult to judge, is it not, because the loss is so different according to the time of the year and the condition of the beasts when they get it?—I think these things were all taken into account. You must remember these calculations are not made by what you might call professional men in the sense of being veterinary surgeons; they are made by practical farmers and milk societies.

1015. The disease I was well acquainted with in 1870 and 1880. They buy the beasts in spring as stores to feed; they do not mind them having it directly at first when they were in store; they thought it rather a good thing, as they did better after it; it only ran through them and took a few weeks; but if they got it in the autumn it was a different matter?—It depends on the virulence of the outbreaks.

1016. In the autumn, when the beasts were fit for market, it was a different thing; it threw them back?—I might say that the system that is being carried on now for dealing with the disease is advantageous to the farmer; he has not to incur that loss.

1017. No; he is paid for what beasts are killed on account of it?—Yes.

1018. You spoke of abortion; you do not think that this disease itself does cause abortion?—I do not think so.

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1019. It is rather singular; I was farming then; I was dairying, farming my own farm for 10 years, and the only time I had abortion was immediately after the foot-and-mouth disease in my cattle?—I am not prepared to say that it would not cause abortion, but it would not cause any number of abortions. I am quite convinced there is only one cause of widespread abortion. Any severe disease will cause an occasional abortion, there is no doubt about that; but where you get a large number of cows aborting there is only one thing that does cause it.

1020. Speaking from recollection, I have seen half my cows have abortion; not half of them, but from 10 to 20 per cent.?—I think you had two misfortunes in one year, but now, of course, we can put that out of all doubt; we can be certain what kind of abortion a man is dealing with.

1021. (*Mr. Bathurst, M.P.*) In view of the possibly different ways of carrying disease in India, do you really consider that the Indian investigation is going to be of any value to us as regards foot-and-mouth disease in this country?—I think, for instance, the investigation of the question that I have already referred to, whether birds can carry the disease or not, could be as well done in India as anywhere else.

1022-23. And insects?—And flies, too. I think one other very important question that I have put down, namely, how long may an animal remain infected after apparent recovery, could probably be investigated in India just as well as anywhere else. And another point that is of great practical importance, namely, at what stage before the vesicles appear is an animal infective to others. You can see the importance of that, of course, in cutting out operations. I think that could be very well investigated in India.

1024. The latency of the disease?—Yes. Say we inoculate an animal to-day, there are no vesicles to-morrow; there is perhaps a little fever; you put another animal in contact for two or three hours and see whether it gets the disease or not, because, of course, you must remember that the farmer, at least, will not in most cases use a thermometer. He will simply look at his animal and say it is out of condition, out of sorts. I think it is of value to have experiments made to test the duration of the virulence, say, of contaminated hay and grain. I do agree that the results might not help us much. On the other hand, if they correspond to what we have found here by cumulative evidence they would be valuable, at least, they would give us more confidence in going on with our operations.

1025. You have hit on the exact point I wanted to know. When you spoke of the duration of the virulence in your examination-in-chief, you were thinking of the duration of virulence in possibly infected articles and not in animals?—Yes.

1026. Well now, I want to ask you about the inspection on the part of local authorities. Is the veterinary inspector of a local authority always a member of the Royal Veterinary College?—No, he is not; but he has always some qualification.

1027. What are those qualifications?—The qualification is that he must be either a member of the Royal College of Veterinary Surgeons, or he must hold the Veterinary Diploma of the Highland and Agricultural Society, or he must be what is called a registered practitioner. You see we are not free yet of the registered practitioner. When the Veterinary Surgeons Act was brought into force, men who had been practising for a period of five years were allowed to continue to practise, and some of those men still exist, and some of them are inspectors.

1028. That is just the point I want to know. Does a registered practitioner necessarily possess sufficient veterinary qualifications, in your opinion?—Well, in my opinion, he does not possess sufficient to be an official inspector under the Acts.

1029. He does not?—No.

1030. Very well, that is just what I want to know. Now what conditions has he to fulfil in order to answer the description of a registered practitioner, or, in other words, how does he come into practice?—He has never been to college, but before the Veterinary Surgeons

Act was introduced he had been in practice for five years. He had a vested interest, as it were, which everyone agrees it would have been unjust to deprive him of.

1031. You are no longer making a registered practitioner?—No, that has stopped.

1032. Is it a class that is gradually dying out?—Yes. There are a good many of them yet.

1033. (*Mr. Nunnely.*) Would they not be older men who have seen this disease?—In that respect I must not be understood to say that some of these men have not had valuable experience. They were not scientifically taught their profession.

1034. (*Mr. Field, M.P.*) For all that they are experienced practitioners?—Some of them are very experienced practitioners, I quite agree.

1035. (*Mr. Bathurst, M.P.*) Apart from the registered practitioners, would these veterinary inspectors of local authorities always know the disease when they saw it?—I think they would in a typical case, and I think they would in most of the cases that we get here, as they are typical. I only remember one which presented some difficulty for the first day or so.

1036. I think we should all recognise that. The sole point I want to get at is, these other men have some educational collegiate qualification?—Yes.

1037. Or, at any rate, educational qualification?—Yes; but I would like to say this, because it is a point that personally I have very much at heart, that I would like to see a still further diploma qualifying veterinary surgeons for this special work in State veterinary medicine. I think it would be most valuable.

1038. (*Mr. Field, M.P.*) Public health work?—Animal health work. I do not mean to suggest that many of the men who are engaged are not competent, but I do not see why we should not have a good service over the country of specially qualified men for this work.

1039. (*Mr. Bathurst, M.P.*) The diploma to be issued by the Royal Veterinary College?—A post-graduate diploma by the Royal College of Veterinary Surgeons. I may also say we have tried very hard—I am a member of the council—to do that for the last two or three years. We have broken down simply for want of funds, and we want a Bill through Parliament to enable us to get these funds. For some reason or other we cannot get it; we are prepared to pay individually the expense of running all this thing, pay it out of our own pockets, but we cannot get authority through Parliament to collect the money.

1040. Apart from the registered practitioners, I take it that these veterinary inspectors are all persons who have been instructed as to the symptoms of foot-and-mouth disease?—Yes, that is so.

1041. Are circulars describing the symptoms sent to these local veterinary inspectors?—Well, they are sent to the local authorities, but we have always this feeling about qualified veterinary surgeons, that to send them out a description of a disease which they ought to know very well is perhaps doing something that may hurt their feelings.

1042. Yet you admit that, at any rate, in the case of the registered practitioners there is no reason for certainty that they do know the disease when they see it?—I do not think that I said that.

1043. No, I am putting it to you?—I do not think that. That is a matter of practical experience.

1044. But, do you really think you would hurt the feelings of these gentlemen if you reminded them of what the symptoms are of a disease which they so seldom see?—Well, I am afraid I have had some practical demonstration that they do resent it, but I do not think there is any reason for doing it. I believe that every man, if you ask him the symptoms of foot-and-mouth disease, could give you a very good description of them. But that is not the point. It is not reading. You may read a thing and when you come up against it you do not recognise it, and I think that that might occur with the younger men who have never had an opportunity of seeing it, but their suspicions would be aroused I am certain.

1045. Now, what happens when an inspector is in doubt as to the existence of disease in a particular animal; is that animal at once isolated?—Yes.

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1046. That is so?—Yes.

1047. Until the inspector of the Board has seen it?—Well, it amounts to that. It could really be until the local authority's expert sees it, but it has worked out that it generally does now until we see it.

1048. There is no danger, in a case of doubt in the mind of the inspector, of the disease spreading until it is finally verified?—No, but I think with regard to foot-and-mouth disease that the quicker you get the thing out of the way the better, and as long as the virus is being kept up there is a greater chance of its spreading. But no time is lost once we get on to it in dealing with it.

1049. But I mean the particular animal about which the doubt is expressed, is it at once isolated from all other animals on the premises?—Yes. That, of course, would not matter very much; under the present regime it would not matter very much; it would matter very little because they would be all wiped out. As a matter of fact, what we do sometimes is to bring them together to circumscribe the danger zone, even if they are only going to become infected, once we know the disease is there.

1050. You said, if I understood you aright, that there was some danger from the manufacture of vaccine with imported virus?—Yes.

1051. Does this actually happen in this country? I mean is vaccine manufactured in this country?—Yes.

1052. With imported virus?—Yes.

1053. And, in your opinion, there are no sufficient restrictions upon such manufacture?—I do not think so. I think, as I said, that there is absolutely no reason to forbid it. It could go on with perfect safety, but there should be a certain amount of restriction which would not interfere with the trade, but would give us a guarantee that under no circumstances would the disease be likely to be spread.

1054. Is there not almost as much danger then from this source as there would be from an experimental station in which sound animals were being fed with suspected food-stuffs?—No, I do not think there is as much, but there is a danger and it is a danger that should be recognised.

1055. Work of both these kinds might be conducted in some isolated place, such as an island off the coast?—Yes, but I do not think that the risk is great enough in relation to vaccine to justify the belief that it is often going to happen, or likely to happen, in a number of cases. It is just my feeling that it has happened in the United States on two occasions.

1056. It could be carried by the experimenters' clothes, I suppose?—Oh, yes, but if they slaughter the animal immediately they have collected the vaccine I do not think that there is any danger, because the process is this: they take this vaccine and they rub it into scarifications on the skin. Now, every experimenter knows that if you take the foot-and-mouth disease virus and inject it under the skin a very large proportion of your cases do not develop foot-and-mouth disease at all. The reason of that is hard to explain, but we know for certain that the introduction of virus under the skin is not a good method of conveying foot-and-mouth disease. Well, they tie these vaccine animals up, and if after they have collected the vaccine they take them straight away and slaughter them, I do not think any of them would develop foot-and-mouth disease. If, on the other hand, they let them loose and they started to lick each other and lick themselves, as they almost certainly would, and did in the United States, they might get the virus on to the mucous membrane of the mouth, and that is a very easy way of giving the disease. Although they do not say it, reading between the lines, that is how infection occurred in the United States of America. They were tied up for days. The one manufacturer said that "It could not be his vaccine. We have done numerous animals," and the first man who supplied the vaccine to him said: "We have never had an outbreak of foot-and-mouth disease." But on inquiring into it it was found that the supplier killed all his animals after he collected the vaccine. The second man did not kill his animals, and

they showed nothing until they got out and were allowed to lick each other.

1057. You referred to Dr. Siegel's discovery. A great deal is being said about it at the present time; do I understand the truth of the discovery is not admitted by other experts in Germany?—I have not seen any of their criticisms; in fact it has received very little notice. Dr. Siegel called together, as I understood it, a large number of veterinarians who were holding a meeting, and he read this paper.

1058. And he did not convince them?—Well, that was an end of it; we have heard very little more about it.

1059. One thing you said rather surprised me, which was, that medical men are not well acquainted with symptoms of animal diseases. Is it a fact that medical practitioners do study, as part of their education, Comparative Physiology of Veterinary Therapeutics?—Oh, no, but that I would regard as a most dangerous man; a man who is half taught a thing.

1060. But, is it not, in your opinion, most desirable that they should study the inter-communication of therapeutics and disease?—Now, coming to that, I ought to qualify my answer. In the post-graduate public health courses there is a certain amount of theoretical instruction with regard to diseases of animals communicable to human beings, more in connection with their pathology. That does exist, but I do think with regard to that, although theoretically it may seem a good thing, that practically it is a mistake.

1061. You mean on the ground that a little knowledge is a dangerous thing?—On those grounds. We have seen scarlet fever diagnosed in a cow by medical men and great hardship produced, a man's place shut up, whereas, if they had called in a veterinary man and given weight to his opinion, he would have said there is no such disease amongst cows as scarlet fever. Other things occur like that, and I think that really it is a great mistake for the veterinary surgeon to try to be an authority on, say, anthrax in human beings, or a doctor to try to be an authority on anthrax in animals. It requires two men with real information about the two subjects to collaborate.

1062. Now, this document has been very widely circulated; it has been sent to every member of Parliament. I want to ask you, as regards their conclusions. First of all, for my own information, is the word "vaccine" equivalent to cow-pox?—Yes, that is cow-pox.

1063. And when they say that "the simbiosis between the infections of vaccinia and foot-and-mouth disease is specially interesting because animals vaccinated with the mixed virus, as a rule, show only the lesions of one of these diseases, namely vaccinia; nevertheless the infectious principle of foot-and-mouth disease remains in the vaccinal eruption." I suppose the suggestion is that the use of this virus which may possibly be the use of what appears to be a foot-and-mouth disease virus, may, in fact, produce small-pox; is that the idea?—In animals?

1064. I will not say small-pox; may produce cow-pox?—In animals?

1065. Yes.—That is why I explained to you about the difficulty of giving foot-and-mouth disease by the subcutaneous method. You can give cow-pox very readily by the subcutaneous method, and if you take the two viruses mixed and rub them on to a scarified skin, you get cow-pox, which is easily produced in that way. You do not get foot-and-mouth disease, but the virus remains there just as if you had rubbed it on the hair of an animal, and if the animal with this scar goes away and another animal comes and licks it and gets it on its mouth, of course, there is a chance of foot-and-mouth disease appearing.

1066. I do not know what is suggested by this document; what I really want to get at is this: Is there, in fact, so close an association between cow-pox virus or cow-pox vaccine and foot-and-mouth disease virus that there is a danger of the importation into this country of foot-and-mouth disease through the medium of lymph?—Oh, I think there is a certain amount of danger.

1067. You think there is?—I think there is. I have accepted the principal conclusions of that document,

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[Continued.]

after a great deal of thought. But they have left out a good deal. They leave a great deal for consideration, and I think it is possible that the virus that was imported was a mistake in this way. They brought it from Japan. They probably collected it in Japan from an animal showing vesicles on the teats, and these vesicles were really foot-and-mouth disease vesicles and not cow-pox vesicles, or the two diseases were existing at one time, and they collected two viruses. They could easily exist at one time; in fact, in the Somerset outbreak they were existing together.

1068. In the Somerset outbreak they were existing?—In the first Somerset outbreak there were lesions of cow-pox along with those of foot-and-mouth disease.

1069. In that particular case, or in other cases for the matter of that, is it possible for foot-and-mouth disease to be introduced into this country in this way?—It has not been so introduced, but it is possible. Of course, since that report came out, I have inquired very carefully about the matter and I have always asked, has anybody been vaccinated on this farm, or has anybody got any eruption on their fingers or on their lips? I do that as a matter of course.

1070. Is it possible to analyse a lymph as to ascertain whether or not it contains the virus of foot-and-mouth disease?—Oh, yes, it was done in the United States of America inquiry; they take it and inject it into the veins of a calf. Now, that is a very sure way of giving foot-and-mouth disease if the virus is there.

1071. But is that done in this country as regards lymph?—No.

1072. It is not?—No.

1073. Is it not desirable that it should be done?—Well, I think it could be done by a lesser method, an easier method.

1074. What would that be?—Well, putting another calf alongside of the animal that had been vaccinated; or the best way, to my mind to prevent all risk, is to send your calves to slaughter; do not sell them at all; you only save a few shillings.

1075. There is only one final question I want to ask you; it is a very big question; and that is this, as to whether, in your opinion, it is possible for us to come to any useful conclusions upon the terms of our reference whether much greater research and experiment than has as yet been conducted with this disease, should be undertaken? Or, in other words, to put it in another way, surely anything that we report, in the absence of further research, must be a matter of vague conjecture only?—I am afraid it would have to be circumstantial; it will have to be based on circumstantial evidence.

1076. Very circumstantial?—Well, of course, it is supported to a certain extent in this way. Let us take the question of hay. We know that if you contaminate hay and give it to another animal, that animal may develop foot-and-mouth disease. What we do not know is, how long the hay will remain infective, and naturally one can only make suggestions about the time that it does remain infective from the evidence which we have been able to gather.

1077. I gather, from what you said to the Chairman just now, that at any rate you admit that it is most desirable that public money should be expended upon further research into this disease and at once?—Yes, I would agree to that.

1078. (Sir Charles Rose, M.P.) I think you told the

Committee that the staff under the Board of Agriculture and yourself was quite adequate at the present time to deal with cases which have arisen recently?—It was quite adequate, yes.

1079. But it would not be in the case of a more violent outbreak?—I do not think we could ever carry such a staff as would suffice for a general invasion.

1080. Is everything being done, or do you think it necessary that anything should be done to increase the staff by special educationalists in the matter?—By special education or by numbers?

1081. To increase the numbers in order to deal with a case of an emergency outbreak?—Well, the trouble is this, that we could not increase our staff to make it sufficient to deal with a wide-spread outbreak, but we should then fall back, if it unfortunately got through the country, on the local authorities whose work it is, and who have a local staff and, I suppose, what would happen would be that we would simply send a man down directing.

1082. The only other thing I have to ask is with reference to this Congress at which you are to represent this country which you say assembles in 1914. I suppose you will take care that great prominence is given to this one subject, as far as possible, but do you think, in view of the Congress, it would be undesirable that any International step should be taken until we hear the result of that Congress?—I really think the best way to do it would be to try to get a reference made, in the first instance, to the 1914 Congress.

1083. (Mr. Field, M.P.) I just want to ask one question, Mr. Chairman. You spoke about an extra diploma for veterinary surgeons?—Yes.

1084. Do I understand you to convey that that diploma would apply more to cattle and to sheep diseases than to horses, because, as a rule, I know in Ireland veterinary surgeons, who are good men for horses, know very little about cattle and sheep diseases?—That is quite true, and the reason of it, of course, is they have never been given any practice.

1085. There is no employment?—There is no employment. But it would not refer to that so much, except as regards contagious diseases. It would be special study, practical and theoretical, dealing with contagious disease in sheep and cattle.

1086. Anthrax, tuberculosis, pleuro-pneumonia, swine fever; you want them to be better versed, as it were, in all these things, because, more or less, veterinary surgeons took greater care of horses in the past than they did of cattle. That is to say, in Ireland these things were left to what were called cow doctors?—That is the case, but the real thing that I would like to see studied is scientific epizootiology. Of course, it is very difficult without material. It is much easier for men in my position, because we have got data before us; hundreds of outbreaks of different diseases come before us, and we study the circumstances. I do think that more instruction should be given on these points, but it is difficult to give to an undergraduate. He must have seen a little first, then come back for the second diploma; after he has seen a little, bring him back and give him a second diploma. He does not need to work for it very long.

1087. (Sir Charles Rose, M.P.) You want someone to fall back upon in case of emergency?—I do think it would be well to have specially trained men throughout the country advising local authorities.

The Witness withdrew.

Sir EDWARD H. ST. L. CLARKE, Bart., Superintending Inspector, Board of Agriculture and Fisheries, called in and examined.

1088. (Chairman.) You are the Superintending Inspector of the Board of Agriculture, are you not?—Yes, sir.

1089. How long have you been that?—Since 1906.

1090. Since 1906 up to the present time you have really been down to see all of these different outbreaks which have taken place in those few years?—Well, I

was not at the Edinburgh one in 1908. I was on duty in the office then, but I can give you any particulars of that from the papers.

1091. As far as I am concerned I am only going to ask you about the outbreaks of this last year, 1911; other members of the Committee may wish to go to earlier dates, but I only wish to ask you about these outbreaks in 1911?—Yes.

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1092. Well, now, before I do ask you about that, will you kindly tell the Committee, first of all, what steps you take when an outbreak is reported to the Board?—I think, perhaps, I had better read the instructions that the Board issue to all their inspectors for it; it will not take very long. The instruction laid down says: "In respect to this disease no obligatory duties are imposed upon the Board by the Diseases of Animals Act, 1894, so that should the number of outbreaks reach such dimensions as to make it impossible for the Board to deal with them individually, it would be left to the local authorities to deal with the outbreaks in their respective districts." And on that the inspectors are reminded that local authorities have powers and duties in connection with the diseases referred to, of which foot-and-mouth disease is one. You have had the general idea of the office instructions given by Mr. Anstruther. When the existence of the disease is confirmed an inspector is instructed by telegram to take charge of the case at once. His first duty is to ascertain whether the inspector of the local authority has carried out his statutory duties and to see that the rules applicable to the infected place are strictly enforced. He is then to make a full inquiry into all the circumstances of the outbreak, and report with as little delay as possible to the Board. Any animals in the immediate neighbourhood of the infected place which have been exposed to infection, and any animals which have been in any way in contact with the infected animals during the periods specified, that is to say, within the last fortnight in foot-and-mouth disease, should be placed under a notice of detention, if this has not already been done by the inspectors of the local authority, or the police. The history of the animals apparently responsible for the introduction of the disease is to be traced, bearing in mind that in many cases the test or known diseased animals may not be the ones that were first infected. The report should contain some description of the animals referred to, that is, whether they are stores, or fat, or breeding. If the inspector arrives at a place where disease exists before the veterinary inspector has completed his duties, he is to give him all the assistance in his power. If it should be requisite for an inspector in the discharge of his duties to enter any place in which animals affected with the disease are confined, he is to wear the same sort of overall clothing that is provided for the veterinary inspectors; that is waterproof clothing that can be disinfected. The rules that we go on, for foot-and-mouth disease, are very much the same as for cattle plague. The provisions as to declaration of an infected place are contained in Section 5 of the Diseases of Animals Act, 1894. It would be the duty of the inspector in charge of the outbreak to advise the Board as to what he considers should be the limits of the infected place, and to place himself in communication with the local authority. The Act of 1894 does not make it obligatory for the Board to slaughter animals affected with foot-and-mouth disease, or other animals being, or having been, in the same shed, stable, herd, or flock, or in contact with an animal affected with foot-and-mouth disease, and, therefore, a report should be sent as soon as possible defining the animals, the slaughter of which, in the opinion of the inspector, is desirable. While the inspector is waiting for instructions as to slaughter, he has to make provisional arrangements for the valuation and slaughter of the animals and be ready to proceed as soon as possible, if the Board do decide to slaughter. The infected place would usually include the whole farm or buildings in the occupation of the owner of the diseased cattle. The description of the infected place is to be as short as it conveniently can be made, provided that the limits are described with sufficient accuracy to enable them to be easily traceable on the ground. In forwarding the description to the Board, the inspector sends a plan, as a rule. In determining what animals have been "in contact" with affected animals, about ten days to a fortnight is taken, and the history of the animals should be traced back for about a month. When the Board receive notification of a suspected case in a district, they warn all inspectors by telegram and we get them to the place as soon as we can. The

inspector first on the spot of course, whoever he is, has to make the arrangements.

1093. You mean the District Inspector, do you?—Whoever gets there first. We warn the General Inspector and the District Inspector; whoever gets there first, has to make the arrangements to be ready to carry on. One of the first things he has to see, is, that the police are stationed at suitable points to prevent the entrance of unauthorised persons to any fields, yards, buildings, &c., occupied by suspected animals at the time, or recently, and to secure the disinfection of all persons leaving the premises. Sometimes we find there has been movement just before, to get out of the way when they have got to know that something has been wrong. He then has to ascertain the history of the case and the movements off the premises of persons, animals or materials likely to convey the disease, and he has to see that all necessary animals are placed under detention notices, and that the required notices are served by the local authority. He has to advise the Board by telegram of the number and description of stock involved and of the limits of the infected place, which will usually be the whole farm or premises in the occupation of the owner or person in charge of the suspected animals. When the case is confirmed, this information is sent in fuller detail in a report which is provided for the purpose, and that report is accompanied by a map on the 6-inch scale showing the stock in each field or set of buildings, and also, as far as the information can be got, showing the stock of other owners in the adjoining farms or fields. Of course, the inspectors have to remember that slaughter is not obligatory, and that they cannot proceed to any considerable slaughter without instructions from the Board, but in the case of animals which are obviously in a condition to spread disease at the time, the inspectors have been given free powers to slaughter on the spot to remove any risk from those particular animals without reference to the Board. In order to be ready to slaughter the moment gets his instructions the inspectors are told to start any available labour they can find on the farm in either digging graves or making cremation pits for the disposal of carcases, because all that takes time; and to secure a valuer to be available at once when he is sent for to value the stock; to get all the supplies they want, all disinfectants arranged for, a gang of labour, from a contractor if possible, to carry on, and if the cattle are running out in meadows, arrange to have a strong stock pen put up into which they can be driven to be slaughtered, which, of course, saves time in catching them and the risk of them breaking away; get a sledge made and chains ready for removing the carcases; get a gun and cartridges or a humane killer ready for the slaughter; provide hay and straw beds on the roads and entrances to foot-paths to be saturated with carbolic acid, and also get lime to spread over roads and entrances; get their supplies of overalls. They are advised not to slaughter until all arrangements are made to dispose of the carcase by cremation or until the graves are ready for burial, and then to slaughter the animals as near the pits as possible. That is in order that they may not be dragged about. Where it is obviously necessary to slaughter animals which are in the slobbering stage of the disease without any delay, and before they have got their pits ready, the plan we have adopted lately is to kill them as near the place where the pits will be as possible, and to light fires of straw saturated with paraffin under the heads and feet, and that chars the surfaces sufficiently to make them not likely to spread the disease. Then, if possible, now we always cremate. We used always to bury in those cases, but in many cases you cannot get the graves for burial deep enough, as you either come to rock or water, and we have found that large cremation pits, similar to those that are used in anthrax in general procedure over the country, will destroy a tremendous number of carcases, so that we have adopted cremation almost invariably. The only places, of course, where we cannot do that are where they are close to buildings or ricks, or stacks. In case of burial we have to be careful not to get near streams or wells or ponds. The in-

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spector is instructed not to attempt to slaughter cattle without first securely roping them, and not to drag the carcasses of affected animals without wrapping the heads and feet in sacking soaked in carbolic. Clothing which has been worn about infected animals by an owner or his men or the butchers is destroyed—it is usually useless at the end of an outbreak—and it is then destroyed, but if it is of any value it is disinfected. All persons working in the infected place are supplied with overalls which will be taken off before leaving, and the persons disinfected in the prescribed manner. The overall clothing is either disinfected, or, if useless, destroyed; but if it is worth disinfecting, it is so disinfected and sent to our laboratory for use again in another case. There are one or two cautions that are given to inspectors; one is as to moving animals which are not actually in the infected place, but are immediately outside it. There is a great feeling sometimes that they ought to be moved away from the outbreak, and, of course, for their own protection it would be good, but there is always the danger of carrying the disease with them in case they are in the incubating period, and it is usually found safer to keep them where they are and, if necessary, to clear the zone behind the first line of animals. Very probably the animals next to the place will never develop the disease; if they have not got it by the time we get to the place, they probably will not take it. We have found it undesirable that veterinary surgeons with private practice should go to suspected cases of foot-and-mouth disease, and, therefore, when we take charge of an outbreak, we ask the local authority to send us reports of further suspected cases, in order that our own staff may visit, and that the local veterinary surgeon, with his private practice to consider, may keep away from the place. I think these are the general instructions.

1094. Do I understand that the clothing of the attendants is made away with?—Usually.

1095. Those men who are attending on the diseased animals; their clothing is destroyed?—That is destroyed.

1096. And they are given overalls themselves?—Yes, but of course, before we can get on the spot to give them overalls their own clothing has become contaminated and, therefore, that has to be destroyed almost invariably.

1097. Then are those attendants allowed to go off the farm?—Well, sometimes we have to allow them to, but they are carefully disinfected before they leave; we cannot always keep them on the place.

1098. There are their boots and all that kind of thing?—Yes.

1099. Then, do I understand now, that you prefer to cremate carcasses, and not to bury them like in the case of anthrax?—Yes, we do; we cremate, as far as possible. I can put in here the circular that the Board have about cremation, which gives the size of the pit, and all that sort of thing: “Memorandum to Local Authorities in Great Britain for the purposes of the Diseases of Animals Acts, 1894 to 1903. Anthrax. Cremation of Carcasses. The most effectual manner of disposing of the carcass of an animal dead of, or suspected of, anthrax, is by the process of burning, or its destruction at a high temperature, provided that this can be done without cutting the carcass. In urban districts this may be done in a destructor, or in a digester, the carcass being reduced by super-heated steam, provided that the opening of the destructor or digester is sufficiently large to admit of the carcass being inserted into the furnace whole, so that the spilling of blood is avoided. It is suggested that where the erection of a new destructor or alteration of an existing destructor is contemplated, the local authority should keep in view the question of the provision of a proper cremation chamber. In districts where destructors are not available, the practice of burning carcasses, by what is known as the Bostock Method, on the spot where death occurred, has been adopted with satisfactory results, 137 local authorities having obtained licences for the purpose. The following description and diagrams of the method above referred to

“are issued for the use of local authorities in this connection: (1) Dig an oval pit 7 feet long, 4 feet wide, and 3 feet deep, with a cross trench at the bottom 9 inches wide and 9 inches deep. (2) Dig a trench 4 feet long, 18 inches wide, and 4 feet deep, about 1 foot from and at right angles to one of the long sides of the pit, and connect this trench by a tunnel with a cross trench in the pit. In loose soil the tunnel may be made with a drain pipe. If the pit is dug on level ground, this trench should be dug 4 feet 6 inches deep to allow a drainage from the cross trenches, which should in that case slope with the tunnel into the trench. (3) This trench is for draught and drainage, and should be on the lower side of the pit. (4) Lay one-third of the fuel in the pit, some wood being arranged over the cross trenches to keep them clear. (5) Sprinkle with paraffin oil. (6) Place the carcass in the pit and arrange the remaining two-thirds of the fuel round and over it. (7) Light the fire at the draught tunnel. (8) When well alight the fire usually requires no further attention, and stirring it would only waste the fuel. (9) The fuel required for the carcass of a large bullock is about half a ton of coal, half a ton of wood, 56 lbs. of straw, 2 gallons paraffin. Coke and peat may be substituted if more easily obtainable. The advantages claimed for this method of cremation are: (1) Economy of fuel. (2) No machinery or grid. (3) The pit, being shallow, can usually be dug in the most convenient place for the cremation. (4) The fire, when once well alight, requires no attention. (5) Complete combustion is secured with the least possible quantity of fuel, the carcass itself feeding the fire, and the heat being concentrated in the pit, instead of being wasted in the open air. (6) By means of the intense heat generated in the pit, smell from the burning carcass is avoided. The Board will be happy to supply further copies of this memorandum on application. Board of Agriculture and Fisheries, 4, Whitehall Place, London, S.W. 20th November, 1908.” The largest pit we have ever had was in the last outbreak, near Martock, where the pit was made 18 feet in diameter.

1100. (Mr. Richardson Carr.) Is that a cremation-pit?—That is a cremation-pit, and in that one pit they destroyed 40 milking-cows, two calves, and several pigs; and the fire burned for a fortnight altogether, including the destruction of material which had to be destroyed on the farm afterwards.

1101. (Chairman.) Then I understand also that the local veterinary surgeon, after you have taken charge, does not come on the premises again?—Not at all; no.

1102. You take full charge; the Board takes full charge of the whole premises?—Yes.

1103. And you then make your area, I take it?—Yes; the area is made from London the moment the case is confirmed with the usual 15-mile circle, and our inspectors on the spot advise as to the description of the infected place only.

1104. And are you satisfied in your own mind that the 15-mile area is the best area; you would not like it reduced, would you?—I think it is a good rough area when you are quite in ignorance of the whole circumstances. It is quite possible that it would not be large enough. If we were mixed up with a market in it, with a very large distributing circle, it certainly would not be large enough, but it is large enough for all movement on hoof probably, and movement of people.

1105. One other thing before I go to the cases. When you go and take charge of an infected farm do you immediately try and find out where the animals come from?—Yes, that is the first thing we ask: “Has there been any movement of animals on to the place and off?”

1106. Then, do you also find out where their different feeding-stuffs have come from?—Yes; that is all traced.

1107. That is all traced?—And also movements of persons.

1108. I will now ask you, first of all, about this Surrey outbreak which was reported to the Board on the 9th March 1911, on the farm premises near

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Chobham, in Surrey. Now, will you tell us about that; first of all, where did the animals come from; they were bred on the farm there?—Nothing had been purchased lately.

1109. How long before?—I can say that nothing had been brought on that was any cause of suspicion there. The movement off was the more important thing there.

1110. Yes; but nothing purchased on the farm for some weeks before?—No; not for some weeks.

1111. There was no further outbreak there?—We were rather anxious about the movement off because there had been a recent movement off, but nothing followed from it.

1112. How many animals were affected there?—There were on the farm premises and in the adjoining fields 24 cattle, 5 pigs, 165 sheep, of which 6 cattle and 3 swine were diseased.

1113. You say no animals had been brought on the farm except for some long time beforehand. Some had gone off, but not any animals had been brought on for some weeks before?—Not for some weeks. I should like to correct that about animals coming on. I have found the papers. The only animals recently going on were some cows, which had been quite healthy, and a boar.

1114. (*Mr. Field, M.P.*) A boar?—He had been sent away to serve some sows and brought back again.

1115. (*Chairman.*) The boar had been sent off to another farm and been brought back again?—And brought back again. No disease was taken to that other farm, and all the stock on that other farm were examined and found healthy.

1116. (*Mr. Field, M.P.*) And the sheep?—There was nothing the matter with the sheep.

1117. (*Chairman.*) Now, about the feeding-stuffs on that farm?—The most likely source of infection, so far as feeding-stuffs were concerned, was some Russian oats, and we traced them through the local corn dealer. We found the vessel they had arrived by and we discovered how they had been landed. They were bagged on board ship, and they were brought by a barge to Nine Elms Station and sent down from there and they were distributed very widely over the country. There was no suspicion of any hides or anything of that kind having been carried in the same vessel, but at the same time, they came from Russia, where no doubt there is plenty of foot-and-mouth disease.

1118. That was Russian oats?—That was Russian oats. There was another origin for this case which was considered equally possible, and that was the adjoining buildings; the farm-house had been let off to some people who are interested in and great breeders of foreign toy dogs. And in addition to that they keep a herd of pedigree goats there, and they attend the goat shows abroad. They are very much backwards and forwards to the Continent. And we found that they had French poultry on the farm, and from inquiries that were made we discovered that they recently had some La Bresse fowls brought over in a crate and the crate was found with the straw and hay in the bottom of it still.

1119. They had come from abroad?—They had come from Normandy, so that evidently there was a great deal of contact with the Continent there, and all the people locally thought that was the origin of the outbreak.

1120. (*Mr. Field, M.P.*) Where did the goats come from?—The goats were English bred; the goats cannot come into this country from abroad.

1121. (*Chairman.*) In your opinion, was there any fear of that?—I think there was a great fear because there was a great deal of contact between the two places and although, in the case of the poultry, we found a crate, and apparently the packing stuff was in it, I cannot say that it was impossible that it might have been introduced in that way.

1122. How far was the house from the farm?—It was the old farmhouse adjoining the yard; it had been converted into a sort of villa.

1123. (*Mr. Field, M.P.*) Practically on the ground then?—Practically on the ground, yes.

1124. (*Chairman.*) As regards these oats, were they

given to these cattle?—They were fed with crushed oats.

1125. They were?—Yes; but still the oats were going to other people in large quantities; it was a very small lot he had.

1126. And was there any other outbreak from that same lot of oats which went to other people?—None.

1127. Really, the only thing in this outbreak at Chobham, of which there might have been a suspicion, is as regards these fowls and these dogs which came in crates with hay and straw in them?—Well, that would be a possible source; I think it is only a possible thing.

1128. You would not like to give that out as really the cause of the outbreak?—Oh, you could not say so at all. The goats were only on the other side of the wall from where the outbreak happened, but we did not slaughter them and they never developed the disease.

1129. Then, you slaughtered all these animals on the farm?—We slaughtered them.

1130. And you have had no further outbreak in that district?—No spread at all.

1131. (*Mr. Field, M.P.*) You slaughtered the sheep, did you?—We slaughtered the sheep which had been in contact on the same farm.

1132. (*Chairman.*) Then, there was no further outbreak at all in that district?—No further outbreak.

1133. (*Sir Harry Verney, M.P.*) Just one thing about these goats. They were probably nearer to contact with the straw and hay than were the other animals?—Yes.

1134. And goats are quite as liable to get it?—Not quite; I understand they are not so susceptible as any of the other animals.

1135. And dogs not susceptible at all?—No.

1136. So you think there is nothing, only the goats?—No.

1137. (*Mr. Richardson Carr.*) You think it might be more likely with chickens; you do not think it would be the chickens, but the packing straw?—Well, we cannot say. We asked them at the house what they had brought from abroad, and they said they had brought nothing, and then afterwards, by calling attention to these fowls which we saw were French fowls, it came out that they had recently had the fowls, so they may have had half a dozen other things.

1138. (*Mr. Field, M.P.*) Did the packing straw come into contact with any of these animals?—Not that; we found it was still in the crate.

1139. (*Mr. Morrison.*) Was it possible, do you think, that the fowls had brought on their feathers germs of the disease, or on their feet?—I should say very unlikely, although the fowls did stray from the neighbouring house to the farm premises.

1140. To the pasture?—Yes.

1141. Is there any restriction or any objection to fowls being introduced in that way and bringing germs?—No, there is no restriction at all.

1142. And no precautions taken to see that they do not bring fowls with germs?—No.

1143. (*Mr. Bathurst, M.P.*) Were any of the fowls destroyed?—No; the fowls appeared to be all right.

1144. (*Mr. Nunneley.*) Do you know if there was much foot-and-mouth disease where these fowls came from?—I think Normandy has been fairly clear.

1145. (*Mr. Morrison.*) You did not trace them to any particular locality?—No.

1146. Did you get the date when they arrived?—I think we did at the time; it was about a month before.

1147. (*Sir Bowen Bowen-Jones.*) Was that straw and hay in the poultry pen examined for the bacillus of foot-and-mouth disease?—No, it was destroyed. But it would not be likely to be that particular lot, because that was found apparently just as it came.

1148. (*Mr. Bathurst, M.P.*) Had it been long left in the crate?—About a month since they came. The crate in which they came was produced.

1149. And no part of the straw had been removed from the crate at all?—Well, we cannot say no part, but there was apparently the little amount they put in the bottom of the crate there.

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1150. (*Mr. Nunneley.*) You do not know whether any of the straw had been taken out of the crate?—No; it is only suspicion; very vague suspicion.

1151. (*Mr. Bathurst, M.P.*) When you say these Russian oats had been bagged on board ship, does it mean that previously they had been stored loose in the hold?—They came in bulk and were bagged on the ship.

1152. You are not able to say what the state of the hold was, or whether it had been previously disinfected?—No. I think one can safely say it had not been disinfected.

1153. They do not in Russia?—No.

1154. It is conceivable that a portion only of a consignment of oats might contain the bacillus, and not the remainder of that consignment?—I should think that is always so. The experiments they have made with cake in anthrax rather point to that. Probably one small piece of the consignment is contaminated, and the rest is perfectly free.

1155. (*Mr. Nunneley.*) Did the people who had those fowls which had come from France go among the cattle, do you know?—Well, they said they did not.

1156. (*Mr. Richardson Carr.*) They are not very likely to, those people?—No; I believe they do go to shows abroad.

1157. (*Mr. Morrison.*) In explaining your regulations you mentioned that when once a centre was established, the local veterinary surgeon kept clear of that centre, and also of any other suspicious case in the neighbourhood, I understand?—Yes.

1158. Would there not be a danger of delay sometimes on that account; would it not mean undue delay supposing a farmer suspected that there was something wrong, that he could not call in his local veterinary surgeon?—Well, he reports in the usual way, and we ask the local authority, instead of instructing their veterinary inspector to attend, to telegraph to us and we send one of our staff who is on the spot there, so that there is no delay.

1159. He would probably call in his own veterinary surgeon to begin with to get his view confirmed?—He probably might, and in several cases the local veterinary surgeon has declined to go when he is told it is likely to be foot-and-mouth disease, because it interferes with his own practice.

1160. That is the point; would not that mean undue delay?—I do not think it does, because they could telegraph to us and we could send a man directly.

1161. From London?—No, from the outbreak. We have some of our inspectors down there inspecting the cattle in the neighbourhood, going round to see they are healthy. We send one of these men, a clean veterinary inspector, to a local suspected case.

1162. When the local veterinary surgeon has visited a case of foot-and-mouth disease, do you insist on his clothes being destroyed?—We always see him; we cannot insist.

1163. You leave it to his own judgment?—We go and advise him what to do.

1164. (*Mr. Bathurst, M.P.*) It is conceivable a local veterinary surgeon, by not taking these precautions, may carry the disease elsewhere?—Very likely. It is always one of the things we do to trace the movements of the local veterinary surgeon after he has been to the suspected place.

1165. What do you do with the remainder of the oats you find on the premises; do you destroy them?—Any that have been in contact with the animals.

1166. Not necessarily the rest?—Not necessarily the rest. We should probably, if we had determined that was the cause, but we have never yet been able to establish it; nothing more than suspicion.

1167. But you have suspected; in the course of your own experience you have been brought to suspect Russian oats as a possible source?—Only because we were aware that there was so much foot-and-mouth disease in Russia.

1168. And a very large and increasing consumption of Russian oats?—Yes, very large.

1169. I do not know whether I am entitled to ask you this, but has it occurred to you as desirable to test

the origin of the disease by feeding these oats to sound animals?—Well, I think it is almost a foregone conclusion that you get nothing but negative results because it has been tried so often in the case of anthrax when it is quite certain that a certain consignment of feeding-stuffs brought the disease, and they have tested sample after sample and they have hardly ever found anything.

1170. When you say tested, do you mean tested by feeding it to the animal? In the case of anthrax I understand you have a bacillus that can be isolated. You mean tested by analysis?—Tested by analysis, yes.

1171. That is rather a different case, is it not?—Yes.

1172. The only possible way in which you could carry out a test in this case, would be to feed it to sound animals?—Yes; to feed it to sound animals. Of course, in a small way, we have done it on one or two occasions. In the Derbyshire case, that we will come to afterwards, the slaughter was somewhat delayed, and in the meantime we fed the consignment of feeding-cake or meal which was supposed to have been a possible way of bringing it, to some calves; but nothing happened. The calves were ultimately slaughtered.

1173. (*Mr. Nunneley.*) This consignment of Russian oats was well tested, because the rest of it had gone all over the country to many parts and done nothing?—Yes.

1174. (*Mr. Richardson Carr.*) It tested itself?—Most of these tests are done automatically for us.

1175. (*Mr. Bathurst, M.P.*) A small portion of the consignment might be the source of the disease, and yet the bulk of it might be quite safe?—That is what I think, therefore you get very little by using the rest.

1176. (*Chairman.*) Then we come to the Hounslow outbreak. That was reported to the Board on the 3rd July 1911, and there were, I see, 76 fat or fattening pigs, of which 37 showed the clinical symptoms of the disease at the time of the veterinary inspector's visit. The owner also had one calf on his premises, and in his field two cows and 17 heifers, to the latter of which disease subsequently spread. In the immediate neighbourhood were the cows and two pigs, and as the premises appeared to be fairly well isolated the Board ordered the slaughter of the whole of these animals. They were all slaughtered; the whole lot?—They were all slaughtered; yes. That was the first case in which we cremated.

1177. Now, had any animals been brought on that farm?—Not recently.

1178. What, for weeks do you mean?—Oh, for two months at least. The pigs had been affected with swine fever and isolated, and it was during that period of isolation, after the swine fever case, that this outbreak of foot-and-mouth disease occurred.

1179. Had any animals gone off the farm?—Nothing.

1180. Well, now, what was the feeding of those animals?—The owner was a collector of refuse from hotels and places of that kind in London.

1181. From London hotels?—Yes. The hotels round Russell Square, I think, were the ones that he went to, and his principal trade was boiling down the refuse for fats for soap, and candle making and similar purposes, and the by-products he used to feed his pigs with. Well, with the refuse containing fats he also got a certain amount of waste greenstuff from these hotels, and that was the only thing which was given to the pigs without being cooked.

1182. Did the outbreak begin in the pigs?—The outbreak began in the pigs, and for that reason it was not recognised for some time, because pigs are not particularly liable to it. It is unusual to get an outbreak starting with pigs. Of course, the first thing that occurred to us, to trace foreign origin, was the green refuse.

1183. (*Mr. Field, M.P.*) Where did that come from?—Well, it was traced up and found that some of it came from Holland probably. We got good information from the caterers for these hotels as to where they bought it, and we got back to the Covent Garden salesman who told us the origin of it; and there is no doubt that some of the lettuces did come from Holland.

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1184. In an infected area, was it?—I should think that is a rather unlikely origin, because you do not have cattle among your lettuces if you can help it. But still, it is a possible origin. I found, on making inquiries into that source of infection, that this is a very large trade, the buying of this hotel refuse in London and boiling it down for fat. There is a man named Squire who has an enormous trade in it not very far from Vincent's, at Bland's Farm, and he has two herds of cattle, which, of course, would be much more susceptible to the disease than pigs. He was sending them up cartloads of this greenstuff every day, and he never had anything wrong with them.

1185. And they did not take it?—He never had anything wrong with them.

1186. (*Mr. Richardson Carr.*) Sending them cartloads of greenstuff?—Yes; green waste. Because he was in a very much larger way than the man who got the foot-and-mouth disease. Where the man who had the outbreak had a barrowful, this man would get a cartload of green lettuce.

1187. (*Chairman*) And this greenstuff came from some of the London hotels?—Came from the London hotels, clubs, and such places.

1188. Then, you had the next outbreak three days afterwards, adjoining, about a quarter of a mile off?—About a quarter of a mile off.

1189. Let me ask you one question about that. What about that local veterinary surgeon? Was it the same veterinary surgeon who went to the first outbreak?—No, he did not visit the second.

1190. He did not go to the second?—No, he had not been to the second. He went to the third.

1191. The third was on the 7th July; that is four days afterwards?—Yes.

1192. But, he did not go to the one on the 6th?—No, that was a cow stalled in a stable that had never been out.

1193. Had any of the men from this farm on which the outbreak of the 3rd July occurred, had anything to do with the farm on which the outbreak of the 6th July occurred?—One of them lived about 100 yards off. That was the nearest connection we could find.

1194. But, he had never been on the premises?—As far we know, he had never been on the premises. Mr. Stockman's idea of it was that it was probably carried by flies. It was very hot at the time, and it is quite within the radius of fly movements. But it was curious, the cow being one that was in a stable and had never been out.

1195. (*Mr. Field, M.P.*) Never been outside?—Never been outside.

1196. (*Chairman.*) Then, in the second outbreak, was that from the same kind of thing, from greenstuff brought on to the farm, the second outbreak on the 6th July?—No, there was no origin to that at all.

1197. None at all?—The middlings and barley had been supplied by the same corn-merchant in Battersea, and there was just a chance that it might have been carried that way, I think, and not, I should say, so much by the food-stuff as by the men who took it in the cart, who delivered it. We could not get the history of his deliveries quite to our satisfaction. He said that he delivered first to the place where the second outbreak was, and afterwards to the place where the first was, but we could not be quite certain that that was correct. Anyhow, he delivered to the two places on the same day.

1198. And you say that none of the men belonging to the farm on which the first outbreak occurred went near the second?—No.

1199. Well then, as regards the third outbreak, one day afterwards. You say the same local veterinary surgeon who reported the first outbreak went on to this other farm where the third outbreak occurred?—Yes, as I said, the outbreak occurred among pigs, and, therefore, was not recognised at first, and the veterinary surgeon who was attending was an inspector of the local authority, and was visiting Vincent's place to see that the rules for a swine fever infected place were observed.

1200. (*Mr. Richardson Carr.*) Is that the third outbreak?—The third outbreak was at the farm of a

man named Newman. The first of these three is Vincent's.

1201. (*Mr. Field, M.P.*) Vincent's was the first, was it not?—Vincent's was the first, and the inspector of the local authority was visiting Vincent's pigs at the time they had foot-and-mouth disease, but he had not recognised it, and he went from there to the third case.

1202. (*Mr. Richardson Carr.*) Newman, Church Farm, at Harlington?—Yes, and subsequently foot-and-mouth disease appeared there, so I am afraid you must consider that he took it there. But the animal that was affected with foot-and-mouth disease there was not one that he had handled or looked at, whereas some animals that he had handled did not take it.

1203. (*Mr. Field, M.P.*) What time elapsed between the first and the third outbreak, and which he subsequently visited?—The first outbreak was on the 3rd July, reported on the 3rd, and No. 3, the one he carried it to, was on the 7th, four days afterwards.

1204. (*Chairman.*) Four days?—Yes, four days.

1205. Then you think that there is a great suspicion that the veterinary surgeon may have taken this disease to the other farm?—I cannot help thinking so. One of the first things we did was to trace his movements after he had been at Vincent's premises, when he was unaware that foot-and-mouth disease existed, and I think that altogether he had visited 13 places in the course of his private practice.

1206. Then he had taken no precautions, I suppose?—Well, he had taken average precautions, but not the precautions he would have taken if he had suspected foot-and-mouth disease. But he was a careful veterinary surgeon in every way. I think that is shown by the fact that in only one place in 13 did it break out. We rather expected to find a sequence of outbreaks when we heard what had happened.

1207. What feeding-stuffs had they at that Harlington Farm, where the third outbreak occurred?—I am afraid I have not got that, but we took that certainly as communicated from the other place.

1208. (*Sir Harry Verney, M.P.*) I just wanted to ask about the dates about the greenstuffs. I suppose any greenstuff must have been separated from the hotel refuse?—Yes.

1209. On what date did it reach the pigs?—We traced the supplies that would have come in for about a fortnight, and every time he was bringing this stuff down from London, which I think he collected three times a week, he brought a certain amount of greenstuff.

1210. From the time it left Holland to the time it reached the pigs was a fortnight?—I could not say that.

1211. That is very important, is it not? Mr. Stockman told us that, exposed to the air, the virus of foot-and-mouth disease would lose its infection in 24 hours?—Did he?

1212. This must have been exposed to the air for 24 hours?—Oh, it must.

1213. It is very important to know whether it kept the infection for a fortnight?—I cannot tell you from the time we get our greenstuff, grown in Holland, to the time we eat it.

1214. Can you tell the minimum?—I do not know.

1215. It must be a week?—I should think very likely.

1216. That rather clashes with Mr. Stockman's evidence; that anything exposed to the air would hold infection for a week?—Yes.

1217. Was he of opinion that this outbreak was due to the greenstuff?—I think he accepted that as a possible explanation.

(*Mr. Morrison.*) He said, in his evidence, it might have been the milk in the Hounslow case.

1218. (*Sir Harry Verney, M.P.*) That rather clashes with Mr. Stockman's evidence that anything exposed to the air will not retain the infection for more than 24 hours?—I must say I have always thought it would probably retain its virulence for more than 24 hours.

1219. Yes, but for a week exposed to the air?—I should have thought a week or a fortnight. I think this is rather far-fetched, because I do not think it is

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likely the animals come into contact with lettuces in Holland. I mean I do not see why Dutch lettuces should be at all likely to bring disease, even if the disease is bad in Holland.

1220. You do not think it is due to that?—It was the best clue we could get.

1221. But you do not think it is just?—I do not think it is a strong one.

1222. (*Mr. Bathurst, M.P.*) Surely it is quite possible that the dung of an infected animal might have been brought in contact with the lettuces?—In growing them? That would rather clash with the theory that it does not retain its virulence long exposed to the air.

1223. I agree, exposed to the air, but I understand that there is a certain amount of what is called French gardening carried on in Holland in these lettuces. There it is not exposed to the air, but put in a series of hothouses. I suppose it is conceivable that it might have conveyed the disease?—It is in that way.

1224. (*Mr. Richardson Carr.*) If you concede that hay and straw are possible carriers of this disease, might not green-stuff be possible carriers if it did not come in contact with the cattle? Do you know what quantity of green-stuff comes from abroad?—There are very large quantities of vegetables of all kinds.

1225. Some of this might come more or less directly or indirectly with the things that might convey the disease?—Yes.

1226. It seems to me a feasible thing that it might possibly convey the disease?—It is just possible.

1227. (*Mr. Nunneley.*) You are speaking of green-stuff. But do you know whether there would be any milk refuse among that hotel refuse?—I suppose there would, but that would all come into the fat boiling.

1228. But could not that come in contact with the greens before?—Yes, no doubt it would.

1229. And if there is any virus in the milk product?—That would no doubt get on to the green refuse and then go to the pigs without being cooked.

1230. (*Mr. Field, M.P.*) There is only one question I want to ask you. Would the green-stuff be any use to cattle after being three weeks out of the soil?—It looked fairly fresh stuff as they got it, I cannot say how long it was away.

1231. It could not possibly be three weeks?—Oh, I should not think three weeks.

(*Sir Harry Verney, M.P.*) I want to try to get at what sort of minimum time it might possibly be; three weeks from the point of view of an hotel.

1232. (*Mr. Field, M.P.*) It could not possibly be three weeks?—The day after they get it, it is fed to the cattle. It is not stored at all; it is as fresh as they get it.

1233. (*Mr. Bathurst, M.P.*) You mentioned flies as a suspected cause of it originally being carried from the first to the second case?—Yes.

1234. Did you suspect any particular kind of fly?—It was a very hot time and there was a lot of blue-bottle flies about, but I am not sufficiently an expert to say how far flies carry this.

1235. Only one other question; is there any other case in your experience where swine fever has been associated with foot-and-mouth disease?—I have not heard of one.

1236. (*Mr. Field, M.P.*) Would not gad-flies be more likely to carry it than blue-bottles, because the gad-flies would sting the cattle; blue-bottles would not in the same way?—Yes.

1237. (*Chairman.*) Really, as regards these three outbreaks, your suspicion is that the first outbreak was due possibly to this green-stuff from this London hotel?—Yes.

1238. The second case is due, from what Mr. Stockman rather thinks, possibly to flies?—Yes.

1239. The third case is by the strong suspicion, that the local veterinary surgeon, not knowing about the case of the pigs till afterwards, may have taken it to the third case?—Yes.

1240. (*Mr. Richardson Carr.*) May I ask one thing about the pigs? Do I understand the veterinary surgeon was attending these pigs when they had foot-and-mouth disease upon them and he had not recognised it?—Yes, for the first few days.

1241. And he brought it to light then?—The symptoms seemed to him unlike swine fever as he looked at them. At first he thought it was swine fever.

1242. It was not swine fever?—They had had swine fever and they were isolated, they were not slaughtered out, and during the period of isolation the pigs began to ail again, and the old man who had had to do with foot-and-mouth disease in the early days, I think, knew a bit himself, and he sent for the veterinary surgeon, and the veterinary surgeon thought it was not foot-and-mouth disease.

1243. He was attending the pigs that had foot-and-mouth disease on them, and he did not recognise that it was foot-and-mouth disease?—Not at first.

1244. (*Chairman.*) Now, we will go the Sussex outbreak. There were three outbreaks there, all within one day, the 17th and 18th July?—Yes.

1245. The Udimore outbreak was on the farm premises, near Rye. There were on the farm premises and the marsh contiguous thereto, six cows, nine calves, 26 yearlings and two-year-olds, and 1,667 sheep and lambs. At the time of the veterinary inspector's visit the affected animals comprised three cows and five calves (one dead) on the farm premises, and one cow and one calf on the marsh land. The two last-mentioned animals were forthwith slaughtered, pending the visit of the Chief Veterinary Officer. Upon receipt of his report the whole of the animals were ordered to be slaughtered. Well now, what about that case? Again, I ask you were any animals brought on the farm?—No; no animals likely to introduce disease.

1246. None at all?—No.

1247. Any animals taken off the farm?—No.

1248. Had you any suspicion of the origin of the outbreak?—The first suspicion that was brought to us was a visit of some French dealers who had been at the market at Rye just about the right time before the outbreak, to account for it, but they had not been handling any of the sheep on the farm, and it was rather difficult to see how the infection could have been conveyed by them to that particular farm.

1249. They had not been on the farm?—They had not been on the farm. The week before they had been at Ashford Market, which is a much bigger one, and nothing had happened from their visit there.

1250. Yes, but I understood you to say about handling these sheep, that some of these sheep had been at the Rye Market?—No.

1251. And these French dealers had never been on the farm at all?—No.

1252. (*Mr. Richardson Carr.*) What was the connection?—It was simply the idea that they must have brought it into the neighbourhood. I could not myself see that there was any foundation for the idea.

1253. (*Mr. Field, M.P.*) That is very indefinite?—Very.

1254. (*Chairman.*) Well now, what about feeding-stuffs on that farm?—There was no suspicion attached to the feeding-stuffs. The only thing we could fall back upon was the sea-birds; it might have been brought over by birds.

1255. How far from the coast is this farm?—Quite close; it is three miles, I should think, to the farm.

1256. But there is nothing in the feeding-stuffs?—Nothing in the feeding-stuffs there.

1257. Next day you had an outbreak at the same parish, at Udimore?—Yes.

1258. There had been constant communication between these premises?—Yes.

1259. The owners being relatives, in all probability the infection was conveyed from those premises?—Yes.

1260. And that is what you think with regard to the outbreak on that day?—Yes, and the third.

1261. And the third, the disease was found to exist in a lot of 22 fattening sheep running in a marsh. The owner had also 10 cattle and 40 sheep on a marsh adjoining the infected marsh. These animals were also slaughtered, together with three lots of sheep, in all 161, which had been exposed to the risk of infection?—The most probable origin of the two second ones in this group was, the sheep having all been dipped together

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on the 15th July. That brought all the people from the various farms together handling them.

1262. Were these holdings all in one man's hands?—No.

1263. Three different men?—Three different men—a father and son, and a complete stranger.

1264. And I suppose there was regular intercommunication between the three farms?—Yes, and they had all agreed to dip their sheep on the same day; it was practically all one outbreak.

1265. But there was nothing in the feeding-stuffs to cause any suspicion?—No.

1266. (*Mr. Field, M.P.*) You mentioned there were 1,600 sheep; they were not killed, were they?—We had to slaughter the sheep very freely there, because they had been running with the cattle over the same marshes, and, at the time they were slaughtering, the sheep were affected to a considerable extent.

1267. Did you slaughter the whole 1,600?—I think we did, and some more.

1268. And more?—I think so. You see we were in a very dangerous spot there. You come to the Romney Marshes with about a quarter of a million of sheep, just joining on to them, and we were obliged to take very strong measures to get through it.

1269. I want your opinion as to the idea that has been proposed here as to whether the sea-birds could become a medium of infection to these marshes?—I do not see any reason why they should not, but I think they cannot be a very great danger, or we should have more of these outbreaks.

1270. It might have occurred in that particular case?—It might.

1271. (*Mr. Morrison.*) In what way do you think the sea-birds might have brought the disease, supposing they did so; in their intestines or on their feathers or feet?—Yes.

1272. Do you think they brought it in their intestines?—Well, I am not really able to say about that. I should think that would be a possibility.

1273. But, would it not be very difficult for sea-birds continually in the sea to bring germs on their feet or on their feathers?—It would be much more likely to come inside them, I think; at least that is my own theory, but I am not an expert.

1274. You have no real knowledge, I suppose, from experimental investigation, as to whether that can be done or not?—No.

1275. (*Sir Harry Verney, M.P.*) Just a word about the theory of these French dealers. Are they supposed to have had it on their clothes?—That was the theory.

1276. Exposed to the air?—Yes.

1277. (*Mr. Nunneley.*) The week before they had been at the Ashford Market; had they been over to France between that and the date of the Rye Market?—Yes, I think so.

1278. Then, it means nothing, that they went to Ashford the week before?—No, except that they would be coming from the same district. Of course, it is chance.

1279. They were at the market within 24 hours of leaving France?—Yes, possibly.

1280. You spoke of sea-birds. I suppose there might be some birds that would fly over the sea without settling?—Yes, I suppose there would be.

1281. I want to ask you about these different outbreaks. Was there any refuse taken on to these farms from the towns at all in the shape of litter or manure or anything of that sort?—In these Sussex ones?

1282. Yes?—Or do you mean generally?

1283. Or at Hounslow?—No.

1284. No hay or straw had been used for packing or anything of that sort?—Not that we could trace.

1285. (*Mr. Bathurst, M.P.*) What do you suppose is the distance from the nearest foreign shore to Udimore?—About 30 miles.

1286. If sea-birds carried the infection, do you suppose they carried it from a foreign country, or from picking up refuse from a ship? What do you gather to be the source of the infection?—I think, if they carried it at all, it would be more likely they carried it from the actual scene of an outbreak. But it is only

guess-work, and I cannot tell you where the nearest outbreak was.

1287. What would the nearest coast opposite Rye be; what country?—France.

1288. Is Rye Market quite close to Udimore?—It would be about three miles.

1289. There was one thing that was done in connection with the Rye outbreak, I understand, and I should like to know whether it is done in every case. I understand you had a belt of lime all the way round the district; is that so?—No; I think it is only the usual straw beds that we had at the entrance to the district by the roads.

1290. That was all?—That was all. You see these three farms made rather a big infected place altogether. The three infected places all join. Wherever the roads came in and went out of that district we had a straw bed saturated with carbolic and also the footpaths; that is what they would mean, and some lime was put on roads, too, where they began.

1291. It was not with the intention of preventing the foxes or hares?—Or people.

1292. —carrying the infection across the fields, but only by road?—Well, the idea was people chiefly. The greatest danger was by people. There is a great deal of traffic by people along the footpaths and the roads, and the greatest possible care was taken to save the Romney Marshes especially.

1293. (*Chairman.*) Well now, we go rather far afield; we go to West Hallam in Derbyshire, on the 21st August 1911. There were 1 bull, 31 cows, 7 calves, 53 sheep and lambs, and 5 pigs on the premises, 5 of the cattle being diseased. The farm was favourably situated, and it was decided to slaughter all the animals thereon, together with 1 cow, which had possibly been exposed to infection. The restrictions were withdrawn as from 30th September. What can you tell us about the outbreak?—There had been no movement on or off there.

1294. No movement on or off for some weeks?—For some weeks. It was the most mysterious outbreak we had to deal with.

1295. What kind of a man was he who had this farm, was he a tenant farmer?—He had been a tenant farmer for many years, a respectable man. We had no reason to doubt the very good history he gave us of it, as far as he knew.

1296. How about feeding-stuffs in that part?—Well, he had had some dairy meal which had just been bagged. That was taken into use just before the outbreak.

1297. How long before the outbreak?—The outbreak was on the 21st of August; well, the cake was taken into use on Wednesday the 16th.

1298. Now, suppose the animals had eaten it, would they have developed foot-and-mouth disease in five days?—That is about the right time.

1299. It is?—Yes. I saw the makers of the cake, and I found that they sent half their consignment to the farmer at West Hallam, Richard Morris, and the other half in the same wagon went to a man named White, of West Hallam. White, of West Hallam, was feeding it to his animals without any bad results at all, and this was the case in which, as I said before, we fed some of it, while slaughter was pending, to the calves and they took no harm from it.

1300. That same cake; what cake did you say it was?—It is called dairy meal.

1301. And you fed that same cake to calves and there were no ill results?—We fed that same cake to calves and there were no ill results at all. Then I went and saw the makers of it and traced up the railway wagon in which it was sent, and found that the wagon had carried some foreign consignments of toys and other things just before, but the wagons were all carefully cleaned before they were used for these things.

1302. Limewashed?—They are not limewashed; they are only carefully cleansed.

1303. Are they disinfected?—They are not disinfected, so there is just the possibility that some of the meal became contaminated in that way from the previous consignment in the truck.

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1304. I understand you to say that with the same cake you fed some calves and they took no harm?—They took no harm, and a neighbouring farmer was feeding all his stock with the other half of the consignment sent in the same wagon. But our theory, of course, about contamination is that there might be one spot contaminated which would only go to the one animal probably.

1305. Quite so?—They gave me a history of their cake; the make of their cake; but I do not know that that would be of any interest to the Committee.

1306. I do not think so unless there is anything particular in the cake?—The ingredients of it come from all sorts of countries and some of these countries are open to suspicion, but then it is all manufactured in this country. They get rice meal from Rangoon, meal from Java, hemp-seed meal from Manchuria, a stuff they call Niger cake, that is the oil seed cake made in India, rape cake from Russia.

1307. Have you had any suspicion of any description of this cake in any other district?—None.

1308. Not in your experience?—No; I do not know any charge against it.

1309. Is that the only thing, and you had hardly a suspicion of it, I may take it?—I had no suspicion of the cake, but I had a suspicion of the railway wagon.

1310. Of the railway wagon?—I do think that is a possible source of infection in these diseases.

1311. Bringing the produce, bringing the cake?—By a wagon that has just a spot of contamination in it and is afterwards used for feeding-stuffs, in that way, I think, that the feeding-stuffs can get contaminated.

1312. (*Mr. Field, M.P.*) Those toys were packed in foreign straw perhaps?—Some of the consignments were packed in straw.

1313. (*Chairman.*) That is the suspicion you have with regard to this outbreak?—That is one suspicion. Another suspicion is brewers' grains. They use them for feeding their cattle, and they had consignments of brewers' grains which they were using, and the same applies there, that they are carried in bulk in the railway truck, and if there is any contaminating stuff left in the wagon it may come with the grains. Those grains are used, of course, enormously.

1314. Are they closed railway trucks?—Some of them are.

1315. For brewers' grains they would be, but for carrying this cake?—They would have tarpaulins.

1316. But these wagons, when they are empty, are exposed to the air?—Yes, they are.

1317. Do you think it likely that the disease would rest in a wagon in all weathers in the open air?—I do not think it is likely, but it might for a short time, because they are used very quickly from one consignment to another. There is no long interval when they are not in use. When they are open wagons they have generally got a sheet over them when they are coming back.

1318. (*Mr. Nunneley.*) A wagon used for toys would be covered, or covered with a tarpaulin?—Yes.

1319. (*Mr. Bathurst, M.P.*) This dairy meal; did it come in bags?—Yes, that came in bags.

1320. Did you suspect the bags as a possible source of infection?—The bags were new bags.

1321. In every case?—In this case all the bags used for this consignment were new bags. So they told me; that is their statement.

1322. Do you happen to know that the meal you fed to the stock came out of the same bag and was some part of the same consignment?—Some part of the same consignment, they had used certainly one bag completely; it would not have been the same bag, I should think.

1323. Have you known in any other cases, Niger cake from India, or rape cake, was ever a possible source or a probable source of the disease?—No, I do not think so. They are all cooked, you see, when they get here. We have had cake implicated in other outbreaks, but we have always thought it was due to external infection of the cake.

1324. In the course of manufacture they are subjected to considerable heat, are they not?—I think there is sufficient heat to destroy the organism of foot-

and-mouth disease. It is not boiling heat or anything like what would destroy anthrax, but it is sufficient to destroy foot-and-mouth disease, I believe.

1325. (*Sir Harry Verney, M.P.*) I wanted to ask very much the same question as the Chairman asked, and that is on a question of dates. The meal was delivered on the 16th August, was it not?—On the 16th, and the outbreak was on the 21st.

1326. It had come, perhaps, in a day in transit from the cake people?—Yes.

1327. It had come from a wagon which had been washed and had previously taken toys which had come from abroad. That is five or six days probably?—Yes.

1328. Do you think it is difficult to believe that the germ of the disease had remained five or six days in that truck?—You are taking me rather out of my depth, but I thought so.

1329. (*Mr. Nunneley.*) If this was a covered wagon which had had toys in it, which would be a comparatively clean thing, would it be washed?—All their wagons are washed before they are used, I believe. They come into their private sidings there, and they are washed and cleaned before they use them for meal.

1330. (*Mr. Morrison.*) Did you inquire about the bags; may it not have been possible that being new bags, they may have carried infection?—Yes; I think there is very little possibility of the bags.

1331. You do not know their history?—They came from Dundee, by sea, to Liverpool. Of course, they might have got contaminated then. They had been in store for a long time.

1332. They would come in the hold?—They would come in the hold; they had been at the cake manufacturers for two months.

1333. (*Chairman.*) Is the cake manufacturers' place at Dundee?—In Liverpool, but they get their bags from Dundee. Most of these bags come from Dundee, I believe.

1334. (*Mr. Field, M.P.*) Only one question, sir. In the process of manufacture, I understand you have conveyed to the Committee there is a certain amount of heat, of course, necessary?—Yes.

1335. Do you think that heat would be sufficient to dislodge any possible infection?—I believe, as regards foot-and-mouth disease, it is quite sufficient; it goes up to from 150 to 180 degrees.

1336. Now, with regard to this particular outbreak. Was there any individual in contact with that farm that might have brought it to the place there?—Two of the people of the village had been over to Holland for their holiday and had come back, but we could not trace whether they had been on the farm.

1337. They had been over to Holland?—Yes, they had been in the district where foot-and-mouth disease was.

1338. How long were they back in the neighbourhood of the outbreak before the outbreak took place?—A very short time. I think about a week. We traced their movements, thinking it might be a source of infection.

1339. Would that not be a more probable source?—Except that they would not be on the farm.

1340. They might have come in contact with somebody that would be on the farm?—It seems probable.

1341. It seems to me a more probable means of conveying infection than the railway trucks?—It is possible.

1342. (*Chairman.*) Now, we will come to Somerset, down in the west country, and we find that there are twelve outbreaks from the 28th September to the 9th October, all in the same district. In what kind of area was this outbreak; was it a very large district where all these different outbreaks took place?—They were all within a distance of two miles of each other, about.

1343. All within two miles of each other?—Within two miles, yes. It was in part of the Sedgmoor district, round Bridgwater, which is called Moors there, but it is really a sort of marshland.

1344. I need not go through all these outbreaks in this district. Can you tell us generally what you found as regards them?—The outbreak started on the premises of Edward Rawle, Manor Farm, Middlezey.

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1345. That is the gentleman who is coming to give us evidence to-morrow?—Yes.

1346. Well?—It was not recognised; it was existing there on a Monday; it was not reported to us till Thursday.

1347. When was it recognised, on the Monday?—It was not recognised on the Monday, but it was present; it was not recognised till the Thursday.

1348. Was a local veterinary surgeon called in on the Monday?—No, he was not called in till the Wednesday; he went on the Thursday and it was then reported to us. The owner did not know it.

1349. The owner did not know what it was?—Yes.

1350. He saw his animals were sickening?—He saw there was something the matter with them; he did not know what it was; he did not do anything about it till the Wednesday. He did not report then; he met his veterinary surgeon on the Wednesday and told him there was something wrong.

1351. He went to Bridgwater Fair himself?—He went to Bridgwater Fair from the farm where he had this foot-and-mouth disease. He gave us the task of tracing the movements of all the sheep and cattle at the Fair. He did not carry any disease to it; he did not go in his farm clothes.

(Mr. Field, M.P.) It is well he put on his good clothes.

1352. (Chairman.) Well, what happened after that on the Thursday?—Certainly on the Wednesday and the Thursday these cattle were in a very infected condition. There was a high wind blowing and I have no doubt the disease was carried by the wind to the nearer cases, which broke out subsequently. It was a very difficult job to deal with, because you have not got large farms there in ring fences, but each individual has perhaps one or two fields on the Sedgemoor, and very likely he will let off one of his fields to somebody else for the grass. In the very dry summer last year the grass was very valuable there, and they got large prices for it. There had been a great deal of movement, and we had the greatest difficulty in tracing all the animals in contact on the adjoining moors and fields, and certainly one of the cases which happened happened among cattle which had been moved, which we did not hear of till afterwards. We did not know they had been moved. Rawle's cattle, I may say, were moving tip and down the road from his field to the farm every day with foot-and-mouth disease on them.

1353. Had you any suspicions of any other kind except this; of anything else on that farm as regards feeding-stuffs or anything like that?—No, there was nothing there. There was some maize brought in for the poultry. That, of course, you can get almost anywhere as a possible origin if you take it, but he was giving no artificial food; they were simply getting grass there. They would be able to pick up the grains from the poultry maize when the cows came to the farm to be milked.

1354. So it was there three days before it was reported, from the Monday to the Wednesday; he went to the Bridgwater Market on Wednesday?—Yes; he then told his private veterinary surgeon.

1355. He went over on Wednesday night?—It was too late on the Wednesday; he went on the Thursday and then the Superintendent of Police reported to us. The local authority's veterinary inspector did not agree that it was foot-and-mouth disease there. He thought it was cow-pox and several other things.

1356. What is the difference between cow-pox and foot-and-mouth disease?—I am afraid I am rather ignorant, and I must ask Mr. Smart to tell you that later.

1357. Is there much difference?—I have never seen cow-pox.

1358. You have no knowledge of anything coming on to that farm which might have brought in this, except possibly, you say, the maize?—The maize was the only possible thing there. The local theory was that it was dug up in clearing out the rhynes, which had never been cleared out for the last 30 years.

1359. We had a letter about that; that was the local opinion, I suppose?—That was the local opinion. It is a peaty sort of soil which preserves things very

much. You find subterranean forests there in perfect preservation, and they thought it would naturally preserve the germs of foot-and-mouth disease.

1360. For 30 years?—For 30 years. Of course the disease was all over the moors at that time; not only limited to that farm.

1361. (Mr. Richardson Carr.) The local authority's veterinary surgeon, you say, did not agree that it was foot-and-mouth disease?—The owners' private veterinary surgeon was quite clear it was foot-and-mouth disease, but the inspector of the local authority did not agree with him.

1362. Then really in two cases we have investigated among these outbreaks there were two veterinary surgeons who did not realise it was foot-and-mouth disease?—Yes.

1363. One is the local authority's inspector?—Yes; he was in the pig case. Of course he had a great deal to put him wrong there, because there was swine fever already on the premises.

1364. Are they alike, do you know?—I think the preliminary symptoms might be a bit alike with pigs.

1365. They might?—Certainly; the foot symptoms would be.

1366. (Mr. Field, M.P.) Do I understand you to say that this man, on whose cattle the disease was first seen, used to drive them from the grass to the farm to be milked every evening?—Yes, morning and evening.

1367. And back again?—Yes.

1368. Of course that extended the disease?—Yes; several of the cases were due to the animals having walked over that piece of road during the time.

1369. You have no clue at all, or no suspicion or theory, as to how it was introduced to that particular farm?—No, I cannot say; I have no theory at all there.

1370. Nothing came from a foreign district?—No.

1371. No travellers?—Well, not that we know of. The outbreak happened just after Bridgwater Fair, when there would have been a considerable number of gypsies and showmen and people of that kind about the district, but we have no reason to know that they were about that farm.

1371A. The gypsies might have foot-and-mouth disease themselves from constant travelling and hunger?—

1372. (Sir Harry Verney, M.P.) I understand the outbreak began on the Monday probably, and that by Thursday the cattle were obviously in a very infective state from disease?—Yes.

1373. Is the local veterinary surgeon who did not recognise it employed by the County Council?—Yes.

1374. Is it fair to ask what his qualifications are?—He is a qualified veterinary surgeon.

1375. You would think it was the most obvious thing in the world after three or four days?—There is no explanation of why he did not recognise it?—No, I think not.

1376. Was not this a case where maize was fed to poultry?—Yes.

1377. (Mr. Morrison.) There was a suspicion that that was the cause of it?—Well, it was possible that when the cows were being driven up to be milked morning and evening there was a chance of picking it up. The maize came from the Danube.

1378. In all these cases, I suppose, you would think it a very important thing to form some local theory as to how the disease originated?—Yes.

1379. You have the same person, or perhaps different persons, in each case, sent down to carry out your regulations, and so on?—We have a different staff.

1380. You send down different men each time?—Generally there is some of the same; not all the same.

1381. You do not aim at having one man to make a special study of the evidence and, as it were, to get some theory that will fit all the cases?—We have been forced to the conclusion that these outbreaks are all different.

1382. You send down different men, and you make no effort?—I think I am the one that goes to all of them myself.

1383. Apart from that, the man in charge may be

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—?—The man in charge will be the General Inspector of the division, but they send me to all of them.

1384. You make a personal investigation also; do you go down also in each case?—Yes.

1385. (*Mr. Nunneley.*) You spoke of a local theory from cleaning out these ditches, or rhynes I think you called them; I suppose that had been done extensively in that neighbourhood?—That was done in that neighbourhood, this very dry summer being the first opportunity they had.

1386. And 30 years ago the disease was prevalent all over; not on this one farm?—Yes.

1387. You do not agree with that theory?—No, because I cannot see why it should be limited to that one place.

1388. Do you know whether it was the birds' migration time from the Continent at that time at all?—I do not know at all whether it would coincide with the migration time. In one of these later cases the infection was supposed to have been carried by water.

1389. (*Chairman.*) One of the Somerset outbreaks?—One of the subsidiary outbreaks in that group.

1390. (*Mr. Bathurst, M.P.*) Do you happen to know what education the veterinary inspector of the local authority had had? Was he a member of the Royal College of Veterinary Surgeons?—Yes, I think he was, but beyond that I do not know.

1391. You say the maize in this case had come from the Danube; do you happen to know what port it had come from?—It is a port called Silena.

1392. A Russian port?—No, I think not; a Roumanian port.

1393. And had this maize come in bags, do you happen to remember?—Maize generally comes in bulk, I think.

1394. In this particular case had it been bagged?—We did not trace it.

1395. You did not suspect the bags at all?—The maize had come from Roumania, and other parts of the consignment had been sent all over the country.

1396. (*Mr. Field, M.P.*) And no ill-effects?—And no ill-effects.

1397. (*Mr. Bathurst, M.P.*) One other question I want to ask: In your experience has there been any other case or cases in which foot-and-mouth disease has been mistaken for cow-pox?—No; not in my experience. As a rule they mistake things for foot-and-mouth disease, but they generally recognise the disease itself.

1398. (*Sir Bowen Bowen-Jones.*) Only one question: Have you any knowledge whether the veterinary inspector of the local authority had ever seen a case of foot-and-mouth disease in his life?—No, he had not.

1399. (*Chairman.*) I am going to ask a thing I ought to know myself, but I am afraid I do not: The District Inspector; what kind of size district does he take; our District Inspectors?—Our District Inspectors take about three counties.

1400. Three counties?—And the General Inspector who comes above them, there are four of them for England and Wales.

1401. Then, when there is an outbreak the local veterinary surgeon reports to the District Inspector?—No, they report to London. The owner has to report to the police; the police to the local authority; and the local authority informs us, and then our action is started from the Board in London.

1402. Well now, in your experience in the last few years, as having been round to all these different outbreaks, have you found that the local veterinary surgeons, as a rule, are up to their work and know what foot-and-mouth disease is?—A great many of the younger men have never seen it.

1403. Have never seen it?—No.

1404. And the consequence may be that they are called in to a case, and in their judgment, not having seen a case, they report it is not foot-and-mouth disease, which may all the time be foot-and-mouth disease, because they have never seen it?—Yes. I think our experience of them is that they are very careful and that they are very much more likely to err on the other side and to report up to us that it is foot-and-mouth disease when it is nothing like it.

1405. You mean that they over-report?—They over-report, fortunately.

1406. There is only one more question: I suppose in all these years you have had no difficulty with the local authorities; they have always assisted you to the best of their power, have they not?—Oh, yes. Since ever I have had anything to do with it. I see by the reports in the early days we used to have trouble with them.

1407. But in your experience you have had nothing but civility and courtesy from the local authorities in every way?—Most cordial support in every way.

1408. (*Mr. Field, M.P.*) On the general question, sir, with regard to the regulations, I understand it is not obligatory to slaughter the cattle when an outbreak of foot-and-mouth disease is reported?—No.

1409. But you have the power to slaughter cattle all the same if you think it is necessary?—The Board have, and the Board have so far delegated their powers to the inspector on the spot that he may slaughter any animal that he thinks ought to be removed at once. That is an animal that is likely to be spreading the disease.

1410. So that practically you have this power, though not obligatory wherever it is necessary?—Wherever it is necessary.

1411. When you think it is necessary. Only one other question with regard to the area; where you confine the cattle, 15 miles I think you take as a general rule?—Yes.

1412. Would that really depend more or less on the circumstances and the character of the country, and anything of that kind?—Yes, it would vary; if there was any big natural feature, of course, dividing the country.

1413. Or a large market was in it?—If a large market was in it, I suppose, they would probably go some little distance further in order to try and cover the district supplied by the market.

1414. I take it though that your department endeavours, as far as possible, to obviate any inconvenience or dislocation of trade?—As far as we can.

1415. As far as is consistent with safety you do it?—Yes.

1416. (*Mr. Richardson Carr.*) Have you got facilities enough for carrying out all these instructions to the Board of Agriculture inspectors and everything; is there a sufficient arrangement?—A sufficient staff, do you mean?

1417. Yes; for carrying it out effectively?—Well, we have so far been fortunate in not having more than one, or at the most two, outbreaks on hand at once, except where they have been grouped, but if it escaped from us and got widely spread in the country, we should not be able to do it. Then, we would hand it over to the local authorities.

1418. Then you would hand it over to the local authorities?—Yes.

1419. That is what you would have to do now?—If it got away from us.

1420. Hand it over to the local authority like this authority of Somersetshire. The man who attended these cattle would have the authority to deal with this case?—Under the directions of his local authority.

1421. They would not know anything about it?—I should think they would call in their consulting veterinary surgeon. They have in Somersetshire a consulting veterinary inspector, and they no doubt would put one of them in charge of it.

1422. It would be out of your hands entirely?—We should still overlook it.

1423. It would have to be done in accordance with your rules?—Entirely in accordance with our rules, oh, yes.

1424. (*Mr. Morrison.*) I suppose you insist on slaughter in any case where you were not immediately in charge?—In any case where we thought we had got the original case we have hitherto slaughtered.

1425. You would hardly leave that discretion to the local authority?—If we handed it over to the local authority I do not think that they would probably slaughter.

1426. That is the point, would you leave them the discretion?—Oh, yes, certainly.

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1427. (*Mr. Richardson Carr.*) It would be left to the discretion of the local authority?—Yes, as to whether they would slaughter or isolate.

1428. (*Mr. Nunneley.*) It would not be handed over to the local authority unless it had really got away from the first place, would it?—No.

1429. You would have charge unless it really got bad?—If it escaped and got widely spread over the whole country I think our own practice would be isolation.

1430. And local authorities would really have to carry out your instructions?—Yes.

1431. (*Mr. Field, M.P.*) That is, if the cases became too great; is not that it?—Yes, and there is not much to be gained by slaughter.

1432. (*Sir Bowen Bowen-Jones.*) If I had been here I would have asked Mr. Stockman this question; perhaps Sir Edward Clarke can answer it. When a suspected case of foot-and-mouth disease occurs I think the local veterinary surgeon, with the sanction of the Board, declares the farm an infected place?—Yes.

1433. Now, supposing the existence of disease is not confirmed, the place, of course, is declared free at once?—Yes.

1434. The National Sheep Breeders' Association think that under those circumstances the Board should state what the real nature of the suspected foot-and-mouth disease, which was not foot-and-mouth disease, really was; what the suspected foot-and-mouth outbreak really was; what the disease really was?—Yes, I know the point. The difficulty is that it might take a certain time to decide exactly what the animals were suffering from. All that we do is to say that it is not foot-and-mouth disease.

1435. Do you not think that, if this were done, public apprehension would be allayed and market business become more quickly normal?—Yes. The only time that I have heard of it was in connection with a report which happened quite close to the Rye case, and I believe that at that time the foreign buyers wanted to know exactly what the disease was, if it was not foot-and-mouth disease. It was a colonial buyer, I believe, who was anxious for the information. I quite see that it would be an advantage to the trade to know exactly what it is, but I do not quite see how we can do it. We want at once to say it is not the disease suspected; that we can do; but very often at the same time we could not say what it was.

1436. Why could you not say what it was; you have experts?—The beasts may want watching to see what it is really.

1437. (*Mr. Field, M.P.*) Is it want of knowledge on your part?—It is only a want of time, I think.

1438. A combination of both?—The beginning stages are so very much alike in many illnesses.

1439. (*Sir Bowen Bowen-Jones.*) That is the real objection, you see, to the information not being given?—That is the objection I see. It is no statutory duty of ours, it is taking the work out of the local practitioner's hands, that we should go and further tell the owner all about it.

1440. No; perhaps the disease may not be scheduled in the Act; I admit that, but an alteration of the law could be arranged, I suppose, to effect that?—That we should say what it is?

1441. Yes. You say it is no business of the Board because the disease is not a scheduled disease; I understand you to mean that?—Yes.

1442. It could be put into force so that in addition to any other diseases now scheduled by law it would enable you to give the information that I was suggesting?—I see.

(*Mr. Richardson Carr.*) You would have to schedule a lot of disease, would you not; you would have to schedule them all because it might be any one of them?

(*Mr. Field, M.P.*) Could you not put the responsibility on the local authority to do it; in default of the Department of Agriculture, why should not the local authority?

(*Sir Bowen Bowen-Jones.*) The Board has taken the infected place in hand and declared, first of all, that there was a suspicion of certain scheduled diseases. If those

diseases do not exist, I think the Board should tell us what the diseases are.

1443. (*Mr. Field, M.P.*) They free the area; the local authority could come into play; they ought to do it in their own interest?—I think the local authority first send up the report of disease and our part is to say it is not what they suspect; they might then carry on, and say what the disease is.

1444. (*Mr. Bathurst, M.P.*) Has this 15-mile radius been imposed in every one of those cases which you have described to us?—Roughly, the 15-mile radius. The Derbyshire one was a little less, I think.

1445. In your experience, what has been the maximum distance that a case has occurred from the first outbreak traceable to that source?—Well, if you take the last case in Somersetshire, which happened near Yeovil, as probably due to the group round Bridgwater, that would be 10 miles, but, of course, there is no direct evidence of that; it may have been absolutely an isolated case.

1446. So far as you have direct evidence, what is the greatest distance that you can trace the disease?—Certainly not more than three miles, but, of course, what our areas are aimed at is to cover the distribution of animals which may have been moved from contact with the case. That is what we start with, and all I say about the 15 miles is, that so far we have fortunately not found anything has gone outside it which was affected, but it does not mean that the distribution has not gone outside. In the case of the Bridgwater Market, a great many of the sheep that were moved went away into South Wales and Surrey, and all over the place.

1447. But, supposing you can satisfy yourself in any case that animals have not been moved, the 15-mile radius might be almost at once withdrawn, might it not; that extent of radius?—As soon as possible, we do withdraw the 15 miles. We divide it first into three zones; I think you had that in the previous evidence; and the first big relaxation is to let the outer zone out altogether.

1448. Yes; my question really was treating each case upon its merits where you are quite certain that there has been no movement of stock, would there be any objection to reducing that wide area at once?—When you come to that conclusion.

1449. Yes.—Yes, I think it should be done at the earliest possible moment when you are quite satisfied that there has been no movement of stock or people likely to carry it.

1450. There was a good deal of feeling, I think, with regard to the Bridgwater outbreak, owing to the isolation of the market?—Yes.

1451. Owing to the radius being so wide, was there not?—Yes, I think the greatest complaints were made about the last one at Yeovil.

1452. That is the one I was thinking of?—It happened just about the time of the Christmas fat stock sales, and a great number of beasts had been sold to go to Portsmouth and other places. That caused a great deal of feeling about it.

1453. What was the distance from Yeovil to the previous outbreak?—The outbreak was at Tintinhull, five miles from Yeovil and about 10 miles from the Bridgwater group, so it was a particularly difficult thing to reduce the area there.

1454. You are prepared to modify the area in special cases if it causes special inconvenience?—Oh, I think at the earliest possible moment we ought to do that.

1455. (*Chairman.*) Before you leave the chair, is there anything you wish to volunteer to the Committee at all, anything you would like to volunteer to us, or any suggestions?—With regard to the hay and straw infection, the case of the Guernsey outbreak was mentioned the first day I was here. Well, I looked up that case afterwards—of course, I had no personal knowledge of it—and I found that the hay was coming over from France; it came over in bundles; it was not trussed hay cut out of a rick, but apparently their system of farming is to collect the hay in sheaves and store it in sheaves, very often over cattle. That you would consider would be a very fertile way of getting

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[Continued.]

disease brought in, and yet that is the only case they had.

1456. (*Mr. Richardson Carr.*) They have not any hay or straw now?—No. They have stopped it now.

1457. And also I think they are particular about the ships; the boats to the Channel Islands?—Yes.

1458. (*Mr. Field, M.P.*) Have you ever heard of any case in the Isle of Man?—I was over in the Isle of Man last week about something else, and they told me the last case of foot-and-mouth disease they had was in 1883. They had a case of pleuro in 1892.

1459. (*Chairman.*) Is there anything else you would like to volunteer or suggest?—I do not think there is anything else.

1460. (*Mr. Field, M.P.*) Have you any suggestion to make to this Committee as to how we could further safeguard the introduction of foot-and-mouth disease through these infective materials from abroad?—From my point of view, there is no question in my mind that these cases of disease do come over in some way with

things that we get from the Continent. But, the small inquiries that I have been able to make myself as to the trades concerned, make me think that interference with trade would be the greater evil of the two. If I were speaking simply as a Board of Agriculture inspector, I should say, of course, regulate all these trades, but I do not really see, from inquiries I have made, how you could do it.

1461. Just one more question, sir. I was very strong in asking the last witness about the desirability of the co-operation of other nations in regard to the endeavour to prevent this disease; do you think an International agreement about certain points would be useful?—I should think it would. The only other thing I might say is about hides. I think myself that hides are the most dangerous of all the things that come in. I think they are much more dangerous than the calves in their skins, which are carefully inspected before they leave, and sheep's heads.

1462. You could have them disinfected very easily?—And at the other side too.

The Witness withdrew.

Mr. W. W. SMART, I.S.O., M.R.C.V.S., Superintending Veterinary Inspector, Board of Agriculture and Fisheries, called in and examined.

1463. (*Chairman.*) You are the Superintending Veterinary Inspector of the Board?—Yes, sir.

1464. How long have you been in that position?—As Superintending Inspector since 1906. I have been an Inspector since 1876, in the old Privy Council days first of all.

1465. Under the old Privy Council?—Yes.

1466. And really your work is more at the ports, I think?—It was until I was appointed Superintending Inspector.

1467. Well now, you propose to give us evidence, first of all, as to the number of officers on the Board's veterinary staff, do you not; will you kindly give us that?—There is one Chief Veterinary Officer, one assistant veterinary officer, two superintending veterinary inspectors, 13 established veterinary inspectors, that is inspectors who are paid salaries and who are eligible for pension, and 14 assistant veterinary inspectors who are paid by salary, but are not yet on the permanent staff. That makes altogether 31 veterinary officers on the Board's staff.

1468. That is all over the county, including the ports and everything?—Yes, those are the salaried officers of the Board. Of those, 12 are employed on permanent work. The work they are doing cannot be dispensed with; they are not available for foot-and-mouth disease inquiries. That leaves the Board with 19 salaried officers who are available, at any time, for foot-and-mouth disease inquiries, if necessary.

1469. (*Mr. Field, M.P.*) And other inquiries?—And other inquiries.

1470. (*Chairman.*) Yes?—These 19 officers, in the ordinary way, are principally engaged in swine fever work, but when we get an outbreak of foot-and-mouth disease they are taken off the swine fever work temporarily and, as many as are required are sent to the seat of the outbreak. The largest number that we have had on any one outbreak was at Rye, where we had nine. We found that we were able to work that with nine inspectors so, if the worst had come to the worst, we should have had 10 more in reserve to work some other outbreak if it had occurred at the same time.

1471. If you had had two or three serious outbreaks like you had, you would have been very much undermanned; you would not be able to do it?—We would not be able to do it; that is why I am explaining the numbers we had.

1472. What are those 12 officers you tell me of who never go to these foot-and-mouth disease outbreaks; in what employment are they?—There is the Chief Veterinary Officer, who is at the office; the assistant veterinary officer is now engaged with a horse-breeding Commission; there is one superintend-

ing veterinary inspector at the office, and of the other nine, seven are employed on port work.

1473. Port?—Port inspection, and two at the laboratory.

1474. At Sudbury?—Yes, at the Board's laboratory.

1475. Have we any veterinary inspectors at all on the other side of the water; I mean at any of the ports abroad?—No.

1476. We have none?—None at all.

1477. Really, as far as I can make out from you, the only officers available belonging to the Board, supposing we got several outbreaks in this country, are 19 veterinary officers?—That is so.

1478. And how many did you use down at Rye, did you say?—Nine. I might explain that we have about 100—sometimes one or two less—veterinary surgeons employed as local veterinary inspectors. They are gentlemen who are in private practice; they are men of good standing. We have them in various centres, and they are paid a small retaining fee, and a special fee for each day they are employed. The Board has the first call on their services.

1479. (*Mr. Field, M.P.*) That is a kind of reserve corps you have?—It is a reserve. Their work is principally in connection with swine fever, and it would, in a case of great emergency, be possible to call on them to assist with foot-and-mouth disease. But there would be this objection to it; practically all of them are men with big practices, and although they would be very suitable for our purpose, their work among diseased animals might interfere with their private practice.

1480. (*Chairman.*) Then do I take it the men you were talking of, the ones you retain, are men in the position of Mr. Lowe, of Norwich?—Yes, the late Mr. Lowe was one, and his son now is.

1481. That is the class of man, with the large practice?—Yes.

1482. Then do you come across the other local veterinary surgeons much?—You mean the inspectors of the local authority?

1483. Yes, but what I call the local veterinary surgeon, who is called into a farm if there is a suspected outbreak?—Yes.

1484. Do you come across many of them?—Yes, a good many of them.

1485. Some of these men are excellent men no doubt, but when some of these men are called in for a suspected outbreak, he may say: "I do not consider this foot-and-mouth disease; I shall not report." In the meantime that may be a case of foot-and-mouth disease?—Yes, sir.

1486. How are we to get over that difficulty, because it is a very serious outlook?—I know it is, but there it

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is. The only way that I can see of getting over it is to adopt Mr. Stockman's suggestion of a post-graduate course, where they might have some special instruction in contagious diseases.

1487. (*Mr. Richardson Carr.*) In different districts?—Some post-graduate lectures at the veterinary colleges.

1488. (*Chairman.*) It seems to me that any day we may come across a huge outbreak all over the country; at any moment we might?—That is, to my mind, one of our greatest dangers.

1489. (*Mr. Richardson Carr.*) We had two cases last year?—The failure to immediately diagnose foot-and-mouth disease was in the first case excusable.

1490. (*Mr. Nunneley.*) I suppose you teach your Port Inspectors; to a certain extent you take care that they do get to know it?—Yes sir; so far as is consistent with safety; if I am in charge, I take the opportunity of pointing out to the assistant veterinary inspectors, the characteristics of the disease, and, what is almost more important, pointing out to them what is not foot-and-mouth disease, but which looks like foot-and-mouth disease.

1491. (*Mr. Bathurst, M.P.*) How is it possible to take off, we will say, those 19 inspectors, to deal with a serious case of foot-and-mouth disease, if swine fever is rampant in the country?—The duties that they are doing would be undertaken, in that case, by the local veterinary inspectors—the veterinary surgeons to whom we pay a retaining fee.

1492. All that can be efficiently done by them; the work in connection with swine fever?—Quite. It then becomes merely a question of a little longer travelling for them.

1493. What is the retaining fee, as a matter of fact?—12 guineas.

1494. 12 guineas a year?—12 guineas a year, and the attendance fee is a guinea.

1495. (*Mr. Richardson Carr.*) A guinea a day?—No, a guinea for each case, with a maximum of, I think, three guineas for one day.

1496. (*Mr. Bathurst, M.P.*) Would it not be worth while, in view of the present danger to which you have referred, to increase that retaining fee in all cases where there is some proved knowledge of the disease on the part of the local inspector?—That is making the veterinary surgeons—whom we know have a knowledge of foot-and-mouth disease—services more valuable than the others.

1497. Yes. In the majority of cases you say they could not be employed on foot-and-mouth disease work?—They would really do the swine fever work in the absence of our 19 salaried inspectors.

1498. I quite agree; but this is your reserve force in case of a serious outbreak?—Well, I only suggest that, we might possibly call on them, but I do not know to what extent we could do it; I do not know whether the Board would agree to call on them. That is a matter of policy I do not know anything about.

1499. You approve Mr. Stockman's suggestion as to the post-graduate course. Do you think that would be sufficient to enable men to recognise the disease when they see it under all circumstances?—Well, yes, I think it should. It should enable them to be able to diagnose foot-and-mouth disease when they see it, but I do not say that the knowledge that they would get there would be quite sufficient to enable them to diagnose a case of disease which was not foot-and-mouth disease, but looked a good deal like it. They might be able to diagnose a typical case of the foot-and-mouth disease, but they might not be able to diagnose what was not foot-and-mouth disease.

1500. Do you think, subject to proper safeguards given, local veterinary inspectors in respect of the retaining fee should have an opportunity of seeing a case?—No, sir.

1501. You do not?—No. When we once get in charge of an outbreak of foot-and-mouth disease we treat the place as a powder magazine.

1502. Would it not be worth while, subject, as I say, to proper safeguards, to give some opportunity to these local men to learn something about the disease when these outbreaks occur?—Well, from the point of view of an inspector of the Board, I think not; the responsibility of watching them is too great.

1503. (*Mr. Morrison.*) In the case of a post-graduate study, would it not be almost necessary that the students should go to a foreign country in order that they might see the disease actually before their eyes?—It would be advisable, but I question whether it would be quite practicable.

1504. Would it not be practicable to offer scholarships which would carry not only the expense, but would also carry a certain reputation so as to induce the best men in the profession to go abroad. In many other ways it would be an advantage, would it not?—That would certainly be an advantage.

1505. It seems to me that a post-graduate study in our own universities of a disease which did not exist there, could hardly be quite reliable; could hardly be quite good?—It would be something in the direction of giving them some knowledge of special diseases.

1506. But you would prefer study at a foreign university if it were possible? Do you think it is impracticable?—It is a question of finance.

1507. (*Mr. Field, M.P.*) It is the money aspect?—It would be impracticable for the majority of younger veterinary surgeons to do it at their own expense.

1508. (*Mr. Morrison.*) But is there no source from which money for such a purpose could be found?—I do not know of any.

1509. Because, we are spending a good deal on agriculture and this seems to be an agricultural subject. The Board do not seem to undertake, to any great extent, the scientific investigation of any of these diseases; for instance, we have only two men in the laboratory?—Yes.

1510. And I suppose their work there is to investigate for the purpose of reporting the actual existence of germs in specimens that may come up to them?—Yes, to a certain extent. The two men that I have mentioned as being at the laboratory are assistants. Mr. Stockman is the chief. He spends a good deal of time at the laboratory.

1511. But you leave to the university, I suppose, what you would call the scientific investigation of any disease?—No, not necessarily. I think that could be done at a properly equipped Board's laboratory quite as well, or better, than it could be done at a university.

1512. But at the present time it is not being done?—It is being done to a certain extent. But then, the laboratory is only comparatively in its infancy. Mr. Stockman is really the first—he has been appointed only about five or six years—scientific investigator that the Board has had.

1513. You would approve of the development of the Board's energies in that direction?—Distinctly.

1514. To a large extent?—Yes, very much so.

1515. For instance, we had a disease called actinomycosis in Scotland, also in England, some time ago which gave us a great deal of trouble?—Yes.

1516. We tried in vain to get any information out of the Board in that connection. You had another disease spring up this year. You think money on the whole would be well spent in developing the scientific side of the Board's work?—I think that is what everybody connected with the Board would like to see.

1517. (*Mr. Field, M.P.*) Just one question. I take it you entirely agree with Mr. Stockman's recommendation about the post-graduates?—Yes.

1518. Would you recommend, or suggest rather, to this Committee that we should make a suggestion in the direction of the questions that have just been put to the last gentleman in regard to scientific research and working it out more? I do not know that it is exactly within the terms of our reference, but it is quite obvious that a great improvement might be made in the direction of scientific research in connection with certain diseases here?—Yes.

1519. With regard to foot-and-mouth disease, you apparently have had a great deal of experience. Is it not your experience, that when foot-and-mouth disease reaches a certain stage probably there is no other disease more easily identified?—Yes, that is so.

1520. In the preliminary stages it is not so easily settled?—No, it is not so easily diagnosed in the pre-

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liminary stages, and it is not so easily diagnosed in the very later stages.

1521. But, when foot-and-mouth disease really catches hold of an animal—I have had some unfortunate experience in business—properly developed, there is no disease that you can more easily identify?—No, it is very easily identified. But the difficulty is in dealing with those cases of disease which simulate foot-and-mouth disease, but which are not foot-and-mouth disease.

1522. I say in the early stages?—Yes, and not only in foot-and-mouth disease, but in other diseases. Mr. Stockman instanced a case to the Committee the other day of some sheep at Rye. Well, there was one particular sheep affected both in the mouth and the feet, and if a particular portion of the mucous membrane of the mouth had been cut off, and one selected bit of the foot cut off and put on a plate, and shown in a laboratory they would probably have been declared to be typical foot-and-mouth disease. But clinical symptoms read with the history of the case and with the other feet of the sheep proved very conclusively that it was not foot-and-mouth disease, which Mr. Stockman eventually confirmed by inoculation.

1523. (Mr. Bathurst, M.P.) What was it, as a matter of fact, do you happen to know?—Yes, sir. There is a grass known as “squirrel-tail;” it is a little grass very like fox-tail, a sort of miniature timothy. When you strip the seeds off it leaves a serrated head like a little saw. Some portions of this grass had

worked into the mucous membrane of the mouth and set up the appearance which was so much like foot-and-mouth disease.

1524. (Mr. Field, M.P.) In that place?—That is where no laboratory or collegiate education would qualify a man to say whether it was foot-and-mouth disease or not, unless he was conversant with field work.

1525. One more question and I am done. You agree with all the former witnesses that, if possible, we ought to have as much co-operation with foreign Governments in the carrying out of these things as possible for the prevention of disease through contagion; taking precautions on both sides of the frontier?—Yes, sir, if we could have that. That question that Mr. Stockman suggests should be gone into at the next Veterinary Congress here was mentioned at one of the Veterinary Congresses on the Continent, I think in 1894.

1526. And nothing has been done since?—Mr. Cope, who was the Chief Veterinary Officer of the Board at that time, attended that Conference as the representative of the English Government. He read a paper on foot-and-mouth disease, and he suggested that the foreign Governments should take some combined action on the matter.

1527. But nothing has been done since?—The journal in which I read the account of the Congress gave the heads of his paper, but it did not give the discussion that followed. Nothing practical ever came of it, so far as I know.

The Witness withdrew.

Tuesday, 13th February 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (*Chairman*), presiding.

Sir CHARLES D. ROSE, Bart., M.P.
Sir HARRY VERNEY, Bart., M.P.
Sir J. BOWEN BOWEN-JONES, Bart.
Mr. CHARLES BATHURST, M.P.
Mr. WILLIAM FIELD, M.P.

Mr. JOHN HINDS, M.P.
Mr. RICHARDSON CARR.
Mr. E. E. MORRISON.
Mr. E. M. NUNNELEY.

Mr. W. H. F. LANDON, *Secretary*.

Mr. EDWARD RAWLE, of Manor Farm, Middlezoy, called in and examined.

1528. (*Chairman*.) The Committee are anxious to have a little evidence from you as regards your outbreak on the 28th September of this last year?—Yes, sir.

1529. Will you tell the Committee when you first had any idea that there was anything wrong with your cattle; on what date?—It was the day before; I saw them wrong on the Wednesday, the 27th I think that would be.

1530. On the 27th of September?—Of September.

1531. What did you think was wrong with them?—Well, I thought it was only just a cold the matter with them. We had had a few frosts and I thought that was what it was due to.

1532. Was it cows that you noticed it in particularly?—Yes, the cows.

1533. And the stores also?—No, there was nothing the matter with the stores; we did not see anything the matter with them.

1534. But the first thing you saw wrong was in the cows?—That is right, sir.

1535. On the Tuesday. What steps did you then take?—I gave them a drench on the Tuesday myself. It was only one cow. Then on the Wednesday morning I asked the veterinary surgeon to come and see them.

1536. You are sure you never noticed anything till the Tuesday?—That is right, sir.

1537. Then on the Wednesday morning they were no better; you gave them a drench the night before?—It was only one cow.

1538. It was only one cow. Then on the Wednesday morning she was no better and you sent for your local veterinary surgeon?—I noticed there was one or two more not well and I asked the veterinary surgeon to come on the Wednesday. He did not come on the Wednesday; he did not come till the Thursday morning. There was a big fair on the Wednesday.

1539. He was at Bridgwater all that day, was he?—Yes.

1540. Therefore he could not come to see your animals till the Thursday morning?—The Thursday morning he came out.

1541. On the Wednesday were they still bad?—Oh, yes.

1542. On the Thursday morning he came?—That is right, sir.

1543. What did he report then?—After he saw the cattle he went and looked at their mouths and so on, and he said he thought it was foot-and-mouth disease. I said: “You go straight back to Bridgwater. You ‘had better report us.’” So he did. Then the Police Superintendent Williams came out in the afternoon.

1544. The police superintendent of the district?—Yes, that is right.

1545. After he had said it was foot-and-mouth

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disease he went straight back to Bridgwater, did he?—That is right, sir.

1546. And reported it to the superintendent?—That is right. I told him he had better do it.

1547. Then Superintendent Williams came out?—Yes, and he brought out another veterinary surgeon.

1548. Was he a local man also?—That is right, sir.

1549. (*Mr. Nunneley.*) It would be the inspector for the County Council that he would bring?—Yes, I expect so.

1550. (*Chairman.*) Then he came out with Superintendent Williams?—That is right, sir.

1551. Then what happened?—Then they looked through the cows and he said it was not foot-and-mouth disease.

1552. Who said so; this other veterinary surgeon?—This other veterinary surgeon, because I asked him my own self, and he said it was not foot-and-mouth disease.

1553. What I rather wanted to get at first of all was this: The first veterinary surgeon who came out was your own veterinary surgeon, near your own farm, I presume?—That is right, sir.

1554. Then the other veterinary surgeon who came out was the veterinary surgeon of the County Council; of the Contagious Diseases Committee of the County Council, was it?—I suppose he was. He came with Superintendent Williams.

1555. (*Mr. Field, M.P.*) You are not sure?—I am not sure.

1556. (*Chairman.*) May I ask you that, Mr. Smart?—(*Mr. Smart.*) That was so. The first veterinary surgeon who went out was a veterinary surgeon employed in private practice in Bridgwater; employed by Mr. Rawle. The second veterinary surgeon who went out with Mr. Williams was the inspector of the local authority.

1557. Then, Mr. Rawle, I understand you to say that from the first your own veterinary surgeon said he thought it was foot-and-mouth disease?—(*Mr. Rawle.*) That is right, sir.

1558. And the veterinary surgeon of the County Council said he did not think it was foot-and-mouth disease on the Thursday morning?—That is right, sir.

1559. Then what steps did they take? Did they report it to the Board of Agriculture then?—Yes, I suppose they did, because there was another veterinary surgeon came down from London the next morning.

1560. And did he confirm the outbreak?—Yes, sir; he said it was foot-and-mouth disease.

1561. Well, the opinion of your own veterinary surgeon was the correct one?—That is right, sir.

1562. And the opinion of the other veterinary surgeon was wrong?—That is right, sir.

1563. (*Mr. Hinds, M.P.*) This was on the Friday he came down from the head office?—Friday morning, about 7 o'clock in the morning.

1564. (*Chairman.*) Then your farm was shut up on the Friday?—That is right.

1565. Was closed?—That is right, sir.

1566. And all precautions were taken?—Yes; we started doing that on the Thursday afternoon by order of the superintendent.

1567. Well, now, Mr. Rawle, have you had any other outbreaks before on your farm?—Well, they told me it was there 30 years ago.

1568. How long had these cows been on your farm?—Over three and a half years.

1569. They had been on the farm over three and a half years?—Some of them. I kept buying in and out.

1570. When was the last you purchased, you put on that farm?—I think it was about harvest.

1571. In August?—Yes.

1572. About five weeks before your outbreak?—That is right.

1573. Where did you get that animal from; do you remember?—I bought one in the same parish and I bought one in Bridgwater Market.

1574. Did the Board's officers, when they came down, trace these animals at all?—Yes, sir.

1575. They did?—Yes, sir.

1576. Then as regards your stores; were they of your own breeding?—Yes, sir.

1577. All of them?—Yes.

1578. They had been on the farm the whole time?—That is right, sir.

1579. As regards the feeding-stuffs for these animals; what had you been feeding these cows on?—Well, they had nothing but grass.

1580. Had you given them no artificial food of any kind?—No, sir.

1581. Nothing at all?—Nothing at all.

1582. What were the stores being fed on?—On grass, just the same.

1583. No artificial?—No artificial.

1584. Had you ever had to your knowledge any litter, any hay or straw of any description, which is commonly used for packing manufactured articles, brought on to your farm?—No, sir.

1585. You had had none?—No.

1586. And you yourself have not the slightest knowledge or suspicion of how these outbreaks occurred?—No, sir; I could not make it out.

1587. You had no suspicion of it at all?—No, sir; no suspicion of it at all.

1588. How far are you from Bridgwater?—Six miles, sir.

1589. Did you have any foreign dealers come out to your farm at all?—No, sir.

1590. You had none?—No, sir.

1591. Did you have any dealers' carts come out to your farm to take any pigs or anything away?—Only just local men.

1592. (*Mr. Bathurst, M.P.*) First of all, what were the symptoms shown by this cow that appeared to have a cold. When you first saw your cow ailing, what was she doing; what appeared to be the matter with her?—Well, she had a bit of a stoppage.

1593. That would not be sufficient to suggest that she had a cold, would it?—Well, I thought she had a cold. She seemed weak across the back, and as we had had a little frost a day or two before I thought she had caught cold.

1594. Was she all bunched up?—Yes; she seemed very stiff and off her feed.

1595. Was she carrying her head down?—Yes.

1596. She was?—Just a little on the Tuesday when I saw her. Then I drenched her, and on the Wednesday morning she seemed a little better.

1597. But when you first saw her, was she dribbling at the nostrils?—No; she was not dribbling at all, that cow was not.

1598. When you say the last animal you purchased was in August, the previous month, was it this particular cow?—No, sir; I had had this cow that I had first had more than three years.

1599. What animal was it you purchased the previous month; another cow?—Another cow.

1600. Was she taken ill?—Yes.

1601. She was amongst those that were taken ill?—Yes.

1602. How many animals were actually taken ill, apart from those that were slobbering; how many animals were actually affected with foot-and-mouth disease?—Well, I could not tell you, sir; there were 18 cows in the field where it was taken.

1603. There were 18 cows in the field?—Yes.

1604. But how many cows were actually known to be suffering from foot-and-mouth disease, do you happen to know?—No, sir, I could not tell you how many.

1605. You say that your cattle were being fed on nothing but grass?—Nothing but grass, through the summer.

1606. You are a fortunate man to have had so much grass last season?—It was just the weather for our country; it was in a moor, very low.

1607. Were they in pretty good condition, your cattle?—Oh, yes, wonderful condition.

1608. They were not on short food in consequence of the drought?—No, sir, I had any amount of grass.

1609. Have you any maize on your farm?—No, sir; I just buy a sack once now and again for the poultry, that is all.

1610. For the poultry?—That is right, sir.

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[Continued.]

1611. Where do you get that from?—Bridgwater; I buy it of the dealers.

1612. You do not know where it comes from to Bridgwater; you do not know where the dealer gets it from?—No, sir.

1613. Have you any oats for your stock; crushed oats; had you any oats on your farm at the time?—Well, I might have had just a few of my own growing.

1614. Of your own growing?—Yes, sir.

1615. None that you had bought?—No, sir, none that I had bought.

1616. When you buy maize it comes to you in bags?—That is right, sir.

1617. How is it brought to you; I mean to say, does it come in a cart?—I send my own cart to Bridgwater for it; it chiefly comes from Bristol, at the first start; from Bristol to Bridgwater.

1618. That is what I want to know. It comes from Bristol to Bridgwater?—That is right; I expect it comes that way.

1619. In bags; is it bagged at Bridgwater?—I think it comes from Bristol all loose.

1620. (*Chairman.*) In bulk?—That is right, sir.

1621. (*Mr. Bathurst, M.P.*) Does the bag that you receive it in come from Bristol or Bridgwater, do you suppose?—Well, I think it comes down from Bristol to Bridgwater in the Bristol man's bags, and then it is shot out into their own bags; the Bridgwater man's bags.

1622. The bags that you have are Bridgwater bags?—That is right, sir.

1623. Do you sell milk?—No, sir.

1624. What sort of a farm is yours; is it a dairy farm?—Yes, chiefly a dairy farm.

1625. Do you make cheese or butter?—Butter, sir.

1626. Do you sell butter?—Yes, sir.

1627. You do not send away any milk in churns?—No, sir.

1628. (*Mr. Nunneley.*) You say with regard to the first cow in which you noticed the symptoms that she seemed weak and stiff in the back and in the loins?—That is right, sir.

1629. And consequently a little lame, I suppose?—Yes, just a little lame.

1630. Did she not slobber any saliva?—No, sir, she did not.

1631. Not at all?—Not at all.

1632. Did the other cows afterwards that had it?—On the Thursday morning, when the veterinary surgeon came, he noticed that there was dribbling at the mouth.

1633. Did you not even notice them making a peculiar champing with the jaws; any of your cows?—No, sir; there was only this one or two of them had it on the Thursday morning. Then it seemed to spread very fast.

1634. Did they then begin to champ with the jaws?—Yes, they did on the Thursday.

1635. They seemed to have it in the feet first?—Yes, they did seem stiff in the feet first.

1636. It is more usual the other way, I think. I suppose yours is mostly grass?—That is all.

1637. Have you any ploughed land?—Oh, yes; I have just got 50 acres.

1638. You do not bring manure, or anything of that sort, from Bridgwater?—No, sir.

1639. With regard to this maize which has been spoken of. I suppose that comes from Bristol to Bridgwater by rail?—That is right.

1640. It does not come by water to Bridgwater; it comes by rail?—Yes.

1641. Would it not probably come in railway sacks, the company's sacks; do you not have them down there?—Yes, it does come down in them sometimes.

1642. But it does not come to your farm in these railway sacks?—No.

1643. It comes in the local sacks?—The local sacks; that is right.

1644. You do not have brewers' grains for your cows; you say your cows have nothing but grass?—They have nothing but grass during the summer.

1645. (*Mr. Hinds, M.P.*) I see that there were 16 cows affected out of the 18. That was on the Thurs-

day morning. Up to that time there were only two or three cows that were affected?—That is right.

1646. And after that it spread very rapidly?—Yes.

1647. And between the Tuesday and the Thursday they went to the marsh, along this public road?—That is right.

1648. You knew that you had to report this, of course, when it was reported to be foot-and-mouth disease?—Oh, yes, sir, we knew we had to report it then.

1649. Did you keep the cow inside? You did not let her out after that, this infected cow?—No, when we knew it was foot-and-mouth disease we never moved the cattle from the field.

1650. (*Chairman.*) Was she out in the field—when you noticed it, was this cow out in the field?—No, the cattle were running in to the sheds to be milked, and this one I kept in from the Tuesday to the Wednesday, and the veterinary surgeon said: "Let her out; she will be better off," and then we put her out with the others.

1651. (*Mr. Hinds, M.P.*) There is nothing peculiar about this marsh at all; this marsh that they went to?—No, sir; no.

1652. (*Mr. Morrison.*) You had some maize on your farm which you fed to poultry; could your cows get near that maize at all?—No, sir.

1653. That is to say, they had no access to the poultry run?—No, sir; they could not get where the maize was at all.

1654. How long had this maize been about the farm—a pretty long time?—Oh no, sir; about three weeks or a month.

1655. You have a new supply every three weeks?—That is right, sir.

1656. It could not have been longer than three weeks, but it might have been three weeks on the farm. I suppose, when you saw your cow ill, you had no suspicion at all of foot-and-mouth disease?—No, sir.

1657. Were you at all on the outlook for anything of the kind?—No, sir; no. I thought they had picked up a kind of a herb or anything as sometimes cattle do.

1658. (*Mr. Nunneley.*) You had never seen foot-and-mouth disease before, had you?—No, sir; no.

1659. (*Mr. Morrison.*) You say that the cow that was first affected was put out afterwards?—That is right, sir.

1660. On the Thursday or Friday?—On the Thursday morning.

1661. On the advice of the veterinary surgeon?—Of my own veterinary surgeon.

1662. Before he had seen it?—No, when he had seen it.

1663. But he reported it to be foot-and-mouth disease, did he not?—Yes.

1664. And he did not advise you to put it out, did he?—He did not think that cow had foot-and-mouth disease when he told me to put her out. He did not think it was foot-and-mouth disease. After we had turned her out into the field, and he had examined 10 or 12 of them, opened their mouths and so on, he said it was foot-and-mouth disease.

1665. Did you put them all out into the field together that morning?—That is how they had been altogether before, running together.

1666. But he examined this cow in the premises and then advised you to put her out?—That is right.

1667. And after she was put out, he examined the others and diagnosed it as foot-and-mouth disease?—That is right.

1668. Then, what was the next step; did you take them all in?—No, we left them in the field.

1669. And took them up and down the road to the milking shed?—No, they were not moved after that.

1670. How did you milk them—in the field?—In the field.

1671. (*Chairman.*) The Committee would like to know what did you do with the milk—the milk from those cows when they were being milked in the field, after they had been said to have foot-and-mouth disease; what did you do with the milk?—We boiled the milk.

1672. By his instructions?—That is right.

1673. Did he tell you to boil the milk?—I forget

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who told us we would have to boil it. One of the veterinary surgeons said we had better boil it and then it would not hurt. We gave it to the pigs. When they got very bad we milked the cows on the ground.

1674. I cannot quite make out what veterinary surgeon it was who told you. Was that the local veterinary surgeon, your own veterinary surgeon, or was it the veterinary surgeon of the County Council; which veterinary surgeon was that?—Who told me about the milk?

1675. Yes?—Well I forget which veterinary surgeon it was; there were three or four veterinary surgeons together.

1676. Because I gather from your evidence that one veterinary surgeon said it was not foot-and-mouth disease, and the other veterinary surgeon said it was?—That is right.

1677. You do not remember which veterinary surgeon it was that told you that?—It was not your own veterinary surgeon.

1678. I know, the Board's veterinary surgeon; but I am talking of the two local veterinary surgeons, one who is your own man, and the other who was sent down from the County Council; do you remember which it was?—I expect it was my own man.

1679. Did you boil the milk on the Thursday, after your own veterinary surgeon had said it was foot-and-mouth disease—?

1679A. (*Mr. Nunneley.*) Did you boil the milk before then, or did you give it to the pigs just as it came from the cows on the Tuesday and the Wednesday?—We used it just the same as we did always.

(*Mr. Hinds, M.P.*) You did not first give it to the pigs; you separated it, and then gave it to the calves and the pigs.

1680. (*Mr. Nunneley.*) Did they have foot-and-mouth disease?—The pigs had and the calves had not.

1681. (*Sir Bowen Bowen-Jones.*) I want just to have this fact: Did you boil your milk after your veterinary surgeon told you, on the Thursday morning, that he thought it was foot-and-mouth disease, or did you not?—Well, I do not know, sir, if I did on the Thursday night; it might have been Friday morning.

1682. Exactly?—That is right, sir.

1683. You did not boil it on the Thursday night?—No, sir; on the Thursday night it was thrown in to the pigs, just as it came from the cows, I think, sir.

1684. You told us a minute ago you made butter of it?—On the Tuesday.

1685. And the Wednesday?—And the Wednesday.

1686. On the Thursday you did not make it into butter?—No.

1687. You gave it to the pigs?—Yes, sir, that is right.

1688. But not boiled?—Not boiled.

1689. On the Friday some one told you you must boil it?—That is right, sir.

1690. (*Mr. Richardson Carr.*) I am sorry to go over the same ground again as some of the other members of the Committee, but what I would like to ask is: When your own veterinary surgeon came on the Wednesday, he said he thought it was foot-and-mouth disease, did he not?—That is right.

1691. Directly he came?—That is right.

1692. Did he suggest your taking any precaution at all? Did he suggest your doing anything to isolate it, or to prevent others coming in contact with this animal or anything else?—Oh, yes; he said we had not better move the cattle at all.

1693. That was the one that was infected, or all the cattle?—All the cattle.

1694. You had not better move any of them at all?—That is right.

1695. And did he tell you nobody should come near the cow, or the shed, or go near the other animals, only the first one? Did the first one say anything?—He said you had not better move your cattle.

1696. But he did not suggest you should be careful of going in contact with other cattle and people?—No, sir.

1697. He gave you no instructions how to go on?—No.

1698. He simply said it was foot-and-mouth disease and he left it at that?—That is right.

1699. Did he handle your cow?—Oh, yes.

1700. Did he wash his hands or do anything before he left?—Yes, he washed his hands up at the house.

1701. He did not suggest your taking any other precautions at all?—No, sir.

1702. Nothing was said, I mean about the men going backwards and forwards?—There was nobody went backwards and forwards into the field.

1703. But the cow was in the shed, was she not?—No, the cow was out in the field.

1704. When he first saw her?—There was one in the shed; he turned this one into the field, and there was no one went into the field after we came out, until Superintendent Williams came out.

1705. After he said it was foot-and-mouth disease, did he still tell you to turn the cow into the field?—It was there.

1706. The veterinary surgeon said he thought it would be better to turn her out?—We turned this cow down with us into the field and then he examined the others.

1707. And then he thought it was foot-and-mouth disease?—That is right, he found it was foot-and-mouth disease.

1708. The other veterinary surgeon and the superintendent came next morning?—The same afternoon.

1709. On the Thursday afternoon?—On the Thursday afternoon; that is right.

1710. And he thought it was foot-and-mouth disease?—That is right.

1711. What caused them to decide to report this case, if they thought it was not foot-and-mouth disease?—Well, I suppose they went by my own veterinary surgeon.

1712. The veterinary surgeon to the County Council, the inspector, was guided by your own veterinary surgeon; was he convinced by him?—Yes, he went by the first veterinary surgeon.

1713. What did they report? Did they report it was foot-and-mouth disease, or suspected foot-and-mouth disease?—Suspected foot-and-mouth disease, I think.

1714. You did not get any manure from the towns, you say, at all; you do not take straw in and bring manure back, I mean?—No, sir. We do generally have a little manure put on the grass sometimes in the summer.

1715. From the towns?—At this time of year.

1716. It is a very usual thing to do; you do get it from the towns?—Yes.

1717. You have not had any lately, then?—No, we have had none since last January.

1718. You do not take any manure from the inn, or anything like that?—No.

1719. And you never use any tan, I suppose, for putting down anywhere from the tan-yards?—No, sir.

1720. You are nowhere near a tan-yard?—No, sir, only Bridgwater, which is about six miles off.

1721. Six miles off, and you never have anything to do with them at all?—We used to have a little timber sometimes.

1722. From the tan-yard?—That is right, sir.

1723. Do they sell timber there?—Yes, the timber merchants.

1724. Yes, but I am speaking of the tannery, where they have these hides?—No, I never have any tan waste.

1725. And you never use any peat-moss?—No.

1726. (*Mr. Field, M.P.*) Have you any theory yourself, or any idea as to how this disease came amongst your cattle? Have you formed any opinion upon it, in view of what has occurred?—Well, I should think it came from the ditches.

1727. The local opinion apparently is that the disease, like some other parties, lies in the ditches; is that it?—That is it.

1728. And how long ago is it since the disease was there before; some 30 years, I think?—30 years.

1729. And you rather agree with popular opinion that the seeds of this disease could remain in the ditches for 30 years. That is the only opinion you have

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formed?—Yes, I think that is my opinion; I do not see where it can come from else.

1730. I do not want to go over the ground that has been already travelled in the questions that have been asked, but, so far as I can gather from your replies, you practically have had no communication with any foreign person or material that could be the means of carrying the infection; is not that so?—Yes.

1731. You have had neither hay, straw, nor tan-yard refuse; no dealers; nothing except this maize?—That is right, sir.

1732. That is the only foreign article or commodity of any kind that has been on your farm?—That is right.

1733. And that maize, I understand—?—Well, we do have some barley meal, that is foreign corn, sometimes.

1734. Were the cows fed on that?—No, the cows had not that at all, just some of the pigs.

1735. So that the cows were not brought into contact in any way with any foreign substance which could be the medium of carrying the infection?—No.

1736. Have you had any experience at all of this foot-and-mouth disease before?—No, sir; none at all.

1737. Your own veterinary surgeon told you it was foot-and-mouth disease?—That is right, sir.

1738. I understand, when you saw the beasts a little wrong, hair standing on end and head down and with sore feet, you naturally concluded it had a cold, some ailment?—Yes.

1739. Then, you drenched it, as some men do?—Yes.

1740. Then, next morning she was better, but not quite right to satisfy you?—She got off her feed.

1741. Anyone who goes off his feed cannot live long, any more than a beast?—That is right, sir.

1742. And then, you sent for your veterinary surgeon and he came. This is the part I want to get at. It seems rather extraordinary that the animal which you brought him to see he did not think had foot-and-mouth disease, and he let her out amongst the other cows, and he examined the other beasts and he found the other cattle in the incipient stages of it; is not that so?—That is quite right, sir.

1743. That seems rather extraordinary. Then, when the other veterinary surgeon came on the scene, he had a different opinion. Doctors differ and patients die, is not that it?—That is right.

1744. Then, when the veterinary surgeon came down from the department, from the Board of Agriculture, he was quite clear about it?—That is right, sir. Oh yes, as soon as he got inside the field, when he saw the first cow, he said it was foot-and-mouth disease, before he touched her.

1745. He, therefore, knew what he was about, do you not think so?—Yes, he seemed to know.

1746. Then, you took all the necessary precautions?—That is right.

1747. There was really no communication between your farm and outsiders to any extent?—No.

1748. Is your holding a self-contained holding? Were they driven along the road anywhere from your place, when they came in to be milked and when they went down to the grass?—Oh yes, about 300 yards they would go on the road.

1749. They were driven on Tuesday and Wednesday?—That is right.

1750. Not Thursday?—Thursday morning; they came in on Thursday morning to be milked and went out again.

1751. Tuesday, Wednesday and Thursday, three days, they went along the public road?—That is right, sir.

1752. Is that public road much frequented by cattle and people?—Oh, yes.

1753. It is a public road?—Oh, yes.

1754. There would be a farm-house just here and the grass is about 300 yards away?—That is right.

1755. (*Mr. Richardson Carr.*) Did you notice, when the veterinary inspector from the Board of Agriculture came down, any difference in the instructions he gave you as to the precautions to be taken from the instructions which the other two veterinary surgeons gave

you? Did he give you more elaborate instructions and did he seem to tell you what to do more?—Well, Superintendent Williams seemed to give me most of the instructions.

1756. The man who lives near you?—The Bridgewater superintendent.

1757. The policeman?—Yes.

1758. But he came before the Board's representative came?—That is right.

1759. When they came they gave you full instructions as to what you should do?—Yes.

1760. He gave you fuller instructions than your own veterinary surgeon did; either of the other veterinary surgeons?—Oh, yes, I expect they must have given a little more.

1761. About taking precautions; they gave you more instructions about that?—That is right.

1762. On the first day, either of your two veterinary surgeons did not say very much about being careful?—No, the policeman gave me all the instructions.

1763. The policeman gave you more instructions than the others?—He gave me written-out notices.

1764. But the veterinary surgeons had not given you instructions about precautions?—No.

1765. (*Mr. Hinds, M.P.*) Your own veterinary surgeon did not instruct you not to use the milk?—No.

1766. (*Mr. Richardson Carr.*) When he said it was foot-and-mouth disease he still did not refer to not doing anything with the produce from the cows?—He did not say.

1767. (*Mr. Bathurst, M.P.*) What did your sick cattle look like when the second veterinary surgeon saw them?—Oh, they seemed a little bit worse.

1768. But what were the symptoms; what did they look like; what were they doing?—They were running at the mouth a little.

1769. They were running at the mouth a little?—Yes.

1770. And they were stiff in the feet?—Yes, but they were not running at the mouth much on the Thursday, only the Friday.

1771. I want to be quite accurate about that. When the gentleman who accompanied Superintendent Williams saw them, were they running at the mouth?—Yes, one or two of them were.

1772. And they were stiff in the feet?—Yes, sir.

1773. Were their coats stirring at all?—Yes, some of them were.

1774. Do not say they were, if they were not?—Oh, yes, they were.

1775. And did they appear to be bunched up; were their heads drooping?—Yes.

1776. Did they carry their heads down?—Yes, they had their heads down, and they were all crumped up together.

1777. In spite of these appearances, you say the second veterinary surgeon did not think it was foot-and-mouth disease?—That is right, but I asked him myself, and he said it was not.

1778. I want to ask just one other question, sir. What litter do you use for your stock; nothing but straw?—Nothing but straw, sir.

1779. All grown on the place?—All grown on the farm; that is right, sir.

1780. Do you buy seed corn or other seed from outside your farm?—Only just locally.

1781. Just from local men?—From local men.

1782. You had not bought any shortly before this outbreak, had you?—No.

1783. Just one final question. How often are these rhynes cleaned out? You have rhynes on your farm, have you not?—That is right, sir.

1784. How often are these rhynes cleaned out?—Sometimes they are not cleaned out once in 20 years.

1785. What was the last occasion on which these rhynes were cleaned out?—I do not expect those rhynes round there had been cleaned out for a good many years.

1786. (*Chairman.*) 30 years—20 years?—I could not tell you. I have only been there three years. They had not been cleaned out for a good many years, I think.

1787. (*Mr. Bathurst, M.P.*) Where are your cattle

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watered; where do they get the water from that they drink?—In the same field, from springs.

1788. From springs; it is not supplied from these rhynes?—Well, it comes out of the springs and then runs round the rhynes.

1789. They are not dew ponds; they are true springs?—Only this last summer there was no water. It has usually come down. There is generally enough water in the rhynes running down.

1790. Were the rhynes dry?—Yes.

1791. The rhynes had run dry?—Yes, sir, that is right. The water usually comes from the canal into these rhynes, and the water had got so low in the canal that it could not come into the rhynes, so the rhynes were dry.

1792. Were they absolutely dry?—Absolutely dry.

1793. No mud?—No, quite dry.

1794. Whose business is it to clean out these rhynes; have you a Commission of Sewers there?—Oh, it is just our ordinary men who clean them out.

1795. It is left to you individually to do it?—Yes.

1796. (*Mr. Richardson Carr.*) Each farmer does it?—Only just the main rhynes the Commissioners do.

1797. (*Mr. Nunneley.*) You say your own veterinary surgeon did not pronounce it foot-and-mouth disease from the first cow, did he?—He did not say much about the first cow.

1798. Still, he could not have thought it was, or he would not have told you to turn it out?—No.

1799. Then that cow must have had it very slightly, I take it?—Yes, very slightly.

1800. The others must have had it very much worse?—Yes.

1801. You saw it more distinctly in the others?—When he came out into the field, he saw it more distinctly in the others.

1802. (*Chairman.*) It comes to this: that your own local veterinary surgeon said it was foot-and-mouth disease, when it was very slight on that animal, and a day and a half afterwards, when the veterinary surgeon from Bridgwater came, when, as you say, the animals were stiff, and when they were running from the nose, that veterinary surgeon said it was not foot-and-mouth disease?—That was the same day. The two veterinary surgeons came on the same day.

1803. (*Mr. Nunneley.*) As I take it, your veterinary surgeon saw these things on the Thursday morning?—On the Thursday morning.

1804. And the other Bridgwater veterinary surgeon saw them on the Thursday afternoon?—These two Bridgwater men.

1805. And the inspector from the Board came on Friday morning?—On Friday morning, that is right.

1806. (*Chairman.*) When your veterinary surgeon from Bridgwater came, they were worse that evening?—That is right.

1807. And he said he did not consider it was foot-and-mouth disease?—That is right.

1808. (*Mr. Hinds, M.P.*) The first man thought they were bad enough to report them?—I suppose it was about two hours between the two visits of the two veterinary surgeons.

1809. (*Mr. Richardson Carr.*) One cow being ill, your own man thought it sufficient to say it was foot-and-mouth disease. What did he form his opinion on; which cow, the first one, was it not?—No, others; two or three others.

1810. Not on the first cow?—No.

1811. (*Mr. Morrison.*) When he saw several of them he began to be suspicious?—That is right.

1812. If there had been only one, he would not have been so sure; when he saw the lot he began to be suspicious?—That is right.

1813. (*Mr. Richardson Carr.*) There was nothing the matter with the others on the Thursday morning when he came?—Oh yes, there was. On the Wednesday morning there did not seem much to do with the others.

1814. (*Chairman.*) Have you had any moss litter on the farm?—No, sir.

1815. I believe in the south of England you have peasants come round from Normandy, and so on; do they ever come round your way?—No, sir.

1816. And you do not have any migration of birds that you know of from the Continent, do you?—No, sir.

1817. (*Chairman.*) Well, Mr. Rawle, we are very much obliged to you; I think that is all we have to ask you, unless you have something else to say. Have you anything to say at all before you leave us?—No, sir, I have nothing to say.

1818. You and the Board, I suppose, work satisfactorily together?—That is right. There is only just one point: this 15-mile radius. There is a lot of the farmers who have been terribly dissatisfied down in the country about that.

1819. About having such a large radius?—About having such a large radius.

1820. (*Mr. Morrison.*) Might I ask, how long that radius remained in force, the 15 miles?—I could not tell you; I did not take much notice.

1821. (*Mr. Field, M.P.*) Could you tell us how long it practically lasted in that radius?—The 15-mile radius?

1821A. How long the outbreak that emanated from your place lasted about the neighbourhood; how long before it was exterminated?—

1822. (*Mr. Nunneley.*) There were several other cases about the neighbourhood?—Yes, there was one at Martock.

1823. Within a fortnight there were several, were there not?—That is right.

1824. And then about two months or six weeks after there was one other about 10 miles away?—That is right. We were closed then for about three or four months, and that is where the farmers have complained it has done them a great injury.

1825. (*Mr. Bathurst, M.P.*) What you want to convey to the Committee, I understand, is, that if possible, this radius of 15 miles ought to be shortened?—That is right.

1826. And that, so far as is consistent with safety, the regulations should be made to meet with the difficulties of farmers?—That is right.

1827. (*Chairman.*) Of course, you must remember this, that it is no particular wish of the Board to go and make the 15-mile radius, but they have to take the best precautions they can?—That is right.

1828. And they have to think of other people besides?—That is quite right.

(*Mr. Richardson Carr.*) The farmers of the present day, the young ones, have not had much experience of foot-and-mouth disease, and they do not know the terrible damage there might be. They do not know what might happen if the radius were lessened. It might be much more serious to them than even the radius.

(*Mr. Nunneley.*) I do not think the farmers who had it 30 years ago would complain.

(*Chairman.*) Thank you very much; many thanks.

The Witness withdrew.

Mr. W. W. SMART, I.S.O., M.R.C.V.S., Superintending Veterinary Inspector, Board of Agriculture and Fisheries, recalled and further examined.

To the last question that you asked me yesterday I did not give a very satisfactory answer. It was the question of taking combined steps by the Continental authorities. A similar Congress to the one that is going to be held in London in 1914 was held in Baden-Baden in 1899, and the late Mr. Cope, who was then chief veterinary officer of the Board, attended

as the representative of the British Government, he had to deal with the question of foot-and-mouth disease, and after describing in his paper the steps that were taken for dealing with the disease in this country, he finished up with this paragraph: "It is for the members of this Congress to decide whether it is possible to adopt a similar policy, and to enforce the same regulations

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"and restrictions on the Continent of Europe as those which have been so successful in Great Britain. I fear not, because of the vast international trade which is constantly proceeding between those countries on the Continent in which foot-and-mouth disease always exists." But the volume of the *Transactions* that I have got does not give any account as to the discussion on that particular point.

1829. (*Chairman.*) When was that?—It was in 1899.

1830. (*Mr. Field, M.P.*) There is a prospect of further concerted action being taken; they have the subject on the tapis?—That is so.

1831. (*Mr. Morrison.*) I am not quite clear as to who really was responsible for giving Mr. Rawle instructions as to his action. He seems to have got them from the policeman. Then is the veterinary surgeon of the County Council, for instance, not the man who gives instructions to the farmer?—Yes, but he had decided it was not foot-and-mouth disease, and there he finished with it.

1832. Then the Board sent down a man?—Then the Board sent down a veterinary inspector.

1833. Then is it not the duty of the inspector of the Board to see that these instructions are properly understood?—Undoubtedly, that would be done when the inspector of the Board got there.

1834. Then the inspector of the Board is the man who is responsible for issuing these instructions after he appears?—Yes, if they have not already been issued; but the probability is that they have already been issued. If the inspector of the local authority has said it was foot-and-mouth disease they have already been given.

1835. (*Sir Charles Rose, M.P.*) Is it not the case that no one need take notice of any instructions unless they come direct from the local police?—I do not think so unless they choose to do it.

1836. That is the only authority that can compel you to take any steps?—Yes.

1837. (*Mr. Morrison.*) Supposing the local inspector pronounces it to be foot-and-mouth disease, he has to give his instructions to the policeman, who alone can speak with authority. Is that so?—Well, yes, I do not think in practice they would divide the responsibility.

1838. Mr. Rawle did not know exactly who gave him the instructions; he was not quite sure; but that is the procedure?—Yes.

1839. The local veterinary surgeon has to instruct the superintendent of the police, who gives instructions?—It is the duty of the inspector of the local authority.

1840. (*Mr. Richardson Carr.*) Might I ask one thing about that? I quite understand the police being the authority, but surely it is the veterinary surgeon. If I call you in to see some cattle of mine suspected of foot-and-mouth disease, and you were doubtful, surely you would say, "I suspect foot-and-mouth disease, but I should advise you not to do this, that, and the other"; you would give me instructions what to do?—Yes.

1841. They must come from a veterinary surgeon, who knows much more about the instructions than a policeman?—Yes.

(*Sir Charles Rose, M.P.*) The machinery can only be put in motion by the police.

1842. (*Mr. Richardson Carr.*) I do not say they were legal laws they had to obey, but they never gave him any suggestions that he was to do this, that, or the other, or what to do until the policeman told him what to do. Surely a veterinary surgeon to a local authority ought to be in a position, even if he had never seen suspected foot-and-mouth disease, to tell them what precautions to take in a suspected case. If you were a veterinary surgeon that is what you would do?—He naturally would do it.

1843. Do you not think that the appointment of the veterinary surgeon of these local bodies should be confirmed by the Board of Agriculture, as the Board has to bear the brunt of these things afterwards?—My view is that distinctly it ought to be.

1844. (*Mr. Morrison.*) Do you not think they ought to have authority to issue instructions and see that they are carried out?—The inspectors of the local authority?

1845. Yes.—They have authority.

(*Mr. Nunmeley.*) It seems to me the difficulty in this case was the inspector who had the authority pronounced it not to be foot-and-mouth disease.

(*Mr. Richardson Carr.*) But, even if he suspected it, he ought to have given instructions.

(*Chairman.*) If I may say so, this veterinary surgeon of the local authority did not suspect it at all.

1846. (*Mr. Richardson Carr.*) He reported it, you see?—It was reported by the veterinary surgeon employed by Mr. Rawle and not by the inspector of the local authority.

1847. (*Chairman.*) Will you proceed with your evidence, Mr. Smart, on the importation of foreign animals? Will you give us the procedure adopted in dealing with cargoes of healthy animals? What procedure do you take in dealing with healthy animals landed at the foreign animals' wharves?—First of all, general procedure in the case of healthy animals about which we have no suspicion. I may mention that the Privy Council Office took over the work first in 1871. Up to that time the inspection was in the hands of the Customs, and ever since 1871 the procedure at all places where foreign animals are landed has been undergoing a process of "tightening up." There have been many Foreign Animals' Orders issued during that time, and each one is more stringent than the former, and now we have screwed it up till it is about as near perfect as can be. A portion of our foreign animals' wharves is set aside as a reception-lair, and in that particular lair the animals are put on arrival. As soon as they are landed they are put into the "reception-lair" to await inspection. The men who are engaged in landing them and the men who tie them up in the reception-lair, all wear overall clothing. Before they leave that lair, they have to wash their hands and take off their overall clothing and disinfect their boots. The animals are kept there in bond, so to speak. A notice like this is posted on the door. "NOTICE.—No Person is allowed to enter this Lair except with the special permission of the Inspector of the Board of Agriculture. By Order, GEO. PHILCOX, Superintendent, Foreign Cattle Market, Deptford." That is taking as much precaution as we can until the animals are inspected. Then, when they are inspected by the inspector of the Board of Agriculture, they are, if healthy, allowed to be dealt with by the owners. The salesmen then take them into the other portion of the wharf, which is used as a market, and sell them and take them to slaughter.

1848. Are you talking of Deptford now?—Of all foreign animals' wharves.

1849. How many are there? Does it apply to Great Britain generally?—Yes, that applies to each foreign animals' wharf. The foreign animals' wharves are at London, Liverpool, Manchester, and Glasgow. They are the only places at which cattle are now being landed. There are two other foreign animals' wharves still in existence where they could be landed, one at Avonmouth, and one at Cardiff, but, as a matter of fact, they have not landed anything there for some years past. They are still keeping them open in the hope of getting some trade. If an animal is landed dead from a ship, as is frequently the case, or if an animal injures himself while in the reception-lair and it is necessary to kill him, he is killed in a slaughter-house which is kept for that particular purpose, and the carcass and all the offal is kept in bond, until all the animals in that cargo are finally inspected and delivered. That is the procedure in the case of healthy animals.

1850. Well, one minute; you say every man who is in charge, who works on those wharves, has a suit of overall clothing, and his orders are to wash his hands and disinfect his boots?—That is only until the animals are found to be healthy. That is while they are in bond, when they are under suspicion, whether they may be diseased or healthy. As soon as they are inspected and found free from disease, he resumes his ordinary clothing.

1851. Then, what is the procedure adopted in dealing with cargoes of diseased animals landed at the foreign animals' wharves?—If it is anticipated that cargoes will be landed with foot-and-mouth disease, that

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is to say, if we have had one diseased cargo, and after we have found that they are more likely than usual to bring disease, an inspector of the Board goes on the ship as soon as he possibly can, in the case of London at Gravesend, in the case of Liverpool in the Mersey, and in the case of Glasgow, at the Tail of the Bank, some distance down the Clyde.

1852. (*Sir Bowen-Bowen Jones.*) At Manchester?—At Manchester he boards them in the Mersey. But this is only when we have special reason to know that we are likely to find disease.

1853. (*Chairman.*) Suspect?—And the object of his going on board is to warn the inspector at the foreign animals' wharf that there is a diseased cargo arriving, and so that we may be a little extra particular in the way of seeing that there shall be no possible hitch, and also to endeavour, if he possibly can, to arrange for the disinfection of the cattle-men who have come over in the ship.

1854. Until last year, until the last Foreign Animals' Order, we have never had any powers by which we could deal with the men that had been in contact with the cattle during the voyage?—That has always been rather a weak place. We could do anything with the diseased cattle when they got here, but until the present Foreign Animals' Order we have never had any statutory powers to deal with the cattle-men who have come over with them. Now we have. I may mention that formerly there was not very much danger. We usually used to get them disinfected by means of a trick. We had no power to deal with them when they were on the ship, but when they were once in the foreign animals' wharves, we could do what we liked with them. The salesmen and the inspectors of the Board worked very amicably together. When I knew that I had disease on a ship and wanted to deal with the cattle-men—these cattle-men had to receive some small payment on coming home—I used to get the owner of the cattle to tell them to come on the wharf to get the money, and then when they came on the wharf to get the money, I could compel them to disinfect their persons and clothing. As long as they were on the ship, I could not. Now, under the Foreign Animals' Order, they are obliged to disinfect themselves on the ship. There is a clause to that effect in the Foreign Animals' Order. The procedure in dealing with a diseased cargo is this: We have a portion of the foreign animals' wharf shut off in which to deal with diseased cargoes and no others. It is a portion of the wharf which, in the ordinary way, is in general use, but as soon as we have a diseased cargo to deal with, that portion of the wharf is shut off. We have made arrangements that whenever we are face to face with disease we know where we can isolate it, where we can isolate any particular cargo. No person then is allowed in except the butchers and drovers, necessary to handle the cattle. They all go in at one door and they all come out at the same door. There is no other means of getting out. They all have to be most thoroughly disinfected, when they come out of the infected place before they go into any other portion of the yard. All the animals are slaughtered in slaughter-houses adjacent to the lairs. They are not taken all about the wharf as they are when they are healthy. The only thing that is delivered to the owner of the cattle are the clean dressed sides of healthy animals, the sides of beef. The carcasses of diseased animals are destroyed by being burned in a destructor within the wharf. The litter, manure, and sweepings, are thoroughly disinfected, mixed with lime and taken out to sea and discharged at sea. That is the procedure with diseased cattle.

1855. The Argentine is not open now?—Not now, sir.

1856. How long has it been closed; the whole of this Argentine traffic; some years now, I think?—Since 1903.

1857. So really you have had nothing of this description for the last three years?—No, nothing since 1903.

1858. (*Mr. Richardson Carr.*) Have they found any foot-and-mouth disease from anywhere else?—Not since 1903.

1859. Nothing at all from anywhere?—Nothing since 1903.

1860. (*Chairman.*) Well then, the disposal of the carcasses, dung, litter, and other articles likely to introduce disease; what is your procedure there? You have told us about the carcasses and disinfection of persons and their clothing?—Yes, sir.

1861. Now, what about the disinfection of the ships that have carried the diseased carcasses?—The ship is sent to sea, all woodwork with which animals have been in contact, all pens, and fittings are burnt in the ship's boilers. The whole of the litter and dung is well saturated with carbolic acid and thrown overboard. Then, the ship is washed and limewashed, before she comes back to port; she is cleansed and disinfected at sea.

1862. What becomes of all the droppings on the wharf when the animals have been landed?—That is all swept up and disinfected, and goes out to sea with the rest of the rubbish, the litter from the lairs.

1863. (*Mr. Nunneley.*) This disinfection is carried on under the inspection of one of your officers?—Yes, a Board of Agriculture Inspector.

1864. (*Chairman.*) You disinfect with what?—Carbolic acid, then lime.

1865. That is the holds?—Everywhere where the cattle have been in contact, of course, not in the passengers' quarters.

1866. Now, what have you got to say about the present methods contrasted with the deterrents and the methods in vogue before the slaughter of foreign animals at port was made compulsory?—I think I might just explain the progress we have made in dealing with cattle from abroad. In the old days—I am speaking now of before 1871—the inspection was in the hands of the Customs, and there were over a hundred places up and down the coast at which animals might be landed. They were all subject to inspection by men who in many cases were not veterinary surgeons.

1867. (*Mr. Richardson Carr.*) By whom were they appointed?—By the Customs. If the inspector found foot-and-mouth disease to exist in a cargo he picked out the diseased animals and sent those not visibly affected on to the market and there they were inspected (in the case of London, I do not know about any other place), by a veterinary surgeon appointed by the local authority. He went through them again and picked out any that had developed the disease in the meanwhile, and the balance of the cargo, with the disease in the incubative stage was then disposed of and distributed all about the country, so it was no matter of surprise that we frequently had foot-and-mouth disease in those days. Well, that was improved on after 1871 when the Privy Council Office took it over.

1868. (*Chairman.*) That was the action under the Privy Council?—Under the Customs.

1869. Oh, under the Customs, before the Privy Council took it over?—When the Privy Council Office took it over the animals were free; i.e., they were allowed to travel if they were free from disease. After 1871, whenever the inspector of the Privy Council Office found disease in a cargo, the whole of the cargo was slaughtered at or near to the port of landing. In some cases there was not sufficient accommodation—immediately adjoining the ship—to slaughter the whole cargo, so the diseased animals were slaughtered there and the healthy ones driven up to a slaughter-house perhaps two or three streets away. That was not found altogether satisfactory, so the Privy Council Office insisted on the provision of foreign animals' wharves as opposed to foreign animals' landing-places, and in the foreign animals' wharves cargoes of diseased animals were dealt with. Cargoes of animals arriving from countries in which disease was known to exist were dealt with, and also cargoes that had been first of all landed at a landing-place and found to be diseased. These were re-shipped and dealt with at a foreign animals' wharf. The procedure with regard to wearing overalls and the reception-lair were not introduced until a few years afterwards. There has been a sequence of "tightening up" from the time when the Privy Council Office first took over the inspection.

1870. (*Mr. Bathurst, M.P.*) You have slaughter-houses at those wharves?—At the foreign animals'

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wharves everything landed must be slaughtered within ten days.

1871. I know now that, when the wharves were started, there were slaughter-houses on these wharves; they had not to be driven up into the towns?—At some places there were slaughter-houses sufficient to deal with the diseased cargo, but not at many. There was sufficient slaughter-house accommodation to deal with a few diseased animals but not with the whole cargo.

1872. (*Chairman.*) You consider, I suppose, that the precautions you take now at these foreign animals' wharves are practically sufficient to stop any disease coming in that way?—Yes, sir, I think they are; in fact, I think the result proves that they are.

1873. You have no suggestions to make to the Committee of any description to improve them at all?—No improvement in the foreign animals' wharves now. There may be, from time to time, little things occur that we did not altogether foresee, and that is what has happened. As we were working the Foreign Animals Order of 1903 we found some weak places. On the first opportunity this was rectified by the passing of the 1910 Order, and I think this is as near perfect as it can be got.

1874. Well, now, what about the inspection by the continental authorities before shipment?—I put that down.

1875. Yes, I think that important?—I put that down more particularly in connection with the suggestion that was made for the disinfection of hides before they come to this country. I thought possibly the Committee might like to know exactly what happened with animals, when we were importing regularly from the Continent, every cargo of animals brought with it the Government certificate or a certificate from the Government veterinary inspector to say that they were free from disease. More than once that certificate has been brought up to us by the officers of Customs at the time we were examining a cargo that had the foot-and-mouth disease in such an advanced stage that the sheep were shedding their feet, so that proves what the value of a Continental certificate was many years ago. What it is now I cannot tell you.

1876. How many years ago is that?—That is 30 to 35 years ago. That would be before 1881; about 1876, 1877, 1878.

1877. It did not say much for their inspection then?—That was the value of it then.

1878. (*Mr. Richardson Carr.*) As to the inspection with regard to the animals that were not diseased and the precaution you take, are you able to carry it all out efficiently at all the various ports; I mean is there a staff sufficient to do it?—Yes, sir.

1879. You think there is?—It is really carried out by the owners of the wharves under the directions of the inspector of the Board of Agriculture.

1880. But are there enough inspectors to see these directions are carried out properly?—Yes, sir, there are.

1881. What becomes of the hides of the animals; what happens to them—the animals that are slaughtered there?—Many of them go back to America.

1882. But a great many of them come into England, do they not?—Oh, yes, they come into England.

1883. Is there anything done with regard to them?—Not from healthy cattle.

1884. Of course, if they were unhealthy cattle?—They would be destroyed.

1885. And when this ship goes to sea and is disinfected, does one of the inspectors of the Board see to that too?—An inspector of the Board goes with her.

1886. Have you any suspicious cases at all of like diseases to foot-and-mouth disease?—No, sir.

1887. None at all? We were talking about the inspecting on the other side; about this certificate they sent when the sheep were so bad. Do you think there would be any good purpose served if we had inspectors in some of the other countries where the cattle come from, that there was no loophole for carrying this disease in any shape or form?—You mean English veterinary surgeons?

1888. Yes.—We should have *no locus standi* there. 1889. It would not be possible?—It would not be practicable.

1890. It has been suggested to me it would be a good thing, that is why I ask?—Anything done in that way would be more or less in the nature of detective work, and whoever was sent over, within 24 hours would be as well known as the town clock.

1891. (*Mr. Field, M.P.*) I understand there is a particular inspection at the ports, the export ports on the other side, such as America?—I believe there is.

1892. The feeling there is that it would be contrary to their interests to allow anything diseased to get on board because immediately the trade would be stopped, is not that so?—That is so.

1893. Are you satisfied from your experience that, as a general rule, the inspection on the other side is fairly carried out?—You are speaking of the present time?

1894. Yes.—With respect to the States and Canada, I think it is.

1895. Because I know, as a matter of fact, the American States are very particular about preventing anything in the nature of foot-and-mouth disease. They claim to be more particular than we are here. I do not agree with them, but they do claim that. With regard to the hides, are you aware of this fact, that the cattle are exported from America on the express condition that the hides go back to America for manufacture?—I have heard that stated.

1896. With regard to the Argentine, have you any knowledge about how things are going in the Argentine at present?—At the present time I have no knowledge.

1897. I only wanted to lead up to this suggestion: Do you think it would be a good thing to get some man who is doing business here in England to give us some information? The Argentine is a place where they are making great efforts to be allowed to import cattle here?—That is really a question for the Committee, but probably if they got hold of the right man they might be able to get some useful information.

1898. Are you aware that the Argentine Consul has for some time, a long time past, been endeavouring to persuade the authorities here that the country is free from foot-and-mouth disease?—I have no knowledge of that.

1899. (*Mr. Morrison.*) Have you had any case at all imported on board ship since 1903?—No case of foot-and-mouth disease.

1900. Have you had any Inspector reporting a suspicious case?—No, sir.

1901. Then your Regulations, although they seem excellent, have not been tested?—Yes, they have been tested for years.

1902. If there has been no case, no suspicious case I mean to say, you really would not have had a fair test, because the disease could not have come, although there had been no inspection?—But this procedure I have described to you was the procedure in vogue during the importation of foot-and-mouth disease from the Argentine in 1901 and again in 1903. The Foreign Animals Order of 1910 contains all the main points in the Foreign Animals Order which was in operation at the time we imported diseased animals, so they have been well tested.

1903. (*Mr. Field, M.P.*) May I just interrupt? Is not that Order the outcome of the experience we gained by the 1903 outbreak?—Yes, to a certain extent it is.

1904. (*Mr. Morrison.*) The Continental certificates that we got 25 years ago I think were not of much good?—They were useless.

1905. Do you get now any Continental certificates at all in connection with carcases or hides or anything of that kind?—I do not know, sir, I have nothing to do with the dead meat trade.

1906. I do not think there are any certificates, as far as I know?—The inspection of imported meat, I understand, is in the hands of the Local Government Board or the Board of Trade.

1907. Would you think that if we were getting nowadays Continental certificates, they would be equally worthless with those we got 25 years ago?—I have no means of knowing.

1908. (*Sir Bowen Bowen-Jones.*) Only one question with regard to the cleansing of the infected suspected

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ships. I suppose they are sent out to sea before loading up their export cargo?—Yes, sir.

1909. And come back and then take their cargo in?—Yes. I might amplify a little what I said about procedure. So soon as an inspector at a port has passed a cargo and found the cargo free from disease, he then gives a certificate to the Customs to say that the animals brought on that ship were free from disease, and the manure is not allowed to be removed from the ship until the Customs get that certificate. If he finds disease on the ship the first thing he does, after having notified the Board, is to send a telegraphic message to the Customs telling them he has found disease on the ship, and asking them to take special precautions by keeping people away from the manure.

1910. How far do they take them out into the ocean to disinfect?—I do not know, sir. There is a special dumping ground, I believe, outside each port; there is a limit within which they cannot discharge manure, &c.; they have to go outside that. I believe, in the case of London, it is the Black Deep.

1911. Beyond Barking somewhere?—Oh, a long way. I think it is beyond Margate.

1912. (Chairman.) Beyond Margate?—As far as that, I believe.

1913. (Mr. Bathurst, M.P.) When you say these hides go back to America, are they first disinfected? The hides of the slaughtered animals on the Foreign Animals' Wharf?—They are not disinfected; they are salted as a rule.

1914. The salt does not act as a disinfectant, does it?—To a certain extent it does.

1915. Would it prevent the communication of foot and-mouth disease?—I think that would depend upon the extent to which they were salted.

1916. Are the holds of the ships where these hides are stowed disinfected?—I have no knowledge of that; you mean the export ships?

1917. Yes, the export ships?—I have no knowledge of that.

1918. I take it that the export ships are also sometimes used for the import of cattle?—Quite likely. I do not know how the hides are taken back to America. Perhaps they go back by the same line or by the same ship. I cannot say.

1919. As regards disinfection, I do not know if you profess to be an expert on disinfecting agencies, do you?—No, sir.

1920. You mentioned phenol, what is popularly called carbolic acid; do you believe in phenol as a disinfectant of woodwork?—Carbolic acid?

1921. Yes?—Yes.

1922. You do?—Yes.

1923. What percentage was used?—A 5 per cent. solution.

1924. You consider 5 per cent. an efficient disinfectant of woodwork?—I may say, as a matter of fact, a mixture stronger than that is used, but a 5 per cent. solution is put down as the standard.

1925. I know it has been the standard in the past, but would you, as an expert, say that 5 per cent. would be adequate?—I am hardly an expert; I have the Disinfection Order to work by. As a matter of fact, I use it stronger. I do not have to pay for the disinfectant, and I see that there is plenty used in the place that I am connected with.

1926. Carbolic acid is not very expensive, is it?—No, sir.

1927. Do you use it up to 10 per cent. as matter of fact?—Yes, a 10 per cent. mixture.

1928. When you subsequently used lime, what is the object, if carbolic acid is an effective disinfectant, of subsequently using the lime?—Well, I look upon the lime principally as the outward and visible sign of disinfection.

1929. I see, but it is applied as a limewash, is it?—Yes.

1930. (Chairman.) It makes the place look smart and clean?—Yes, sir, and we can all see where the whitewash brush has been, but we cannot see where the carbolic-acid brush has been.

1931. (Mr. Richardson Carr.) You would not care

about the whitewash if it had been properly disinfected with carbolic acid?—Personally, I should not.

1932. (Mr. Bathurst, M.P.) How long, in your opinion, is an application of lime effective as a disinfectant? I ask this because it is a matter of some importance in connection with swine fever. You apply lime to woodwork; how long, in your opinion, is the limewash a disinfectant after being exposed to the atmosphere?—Not very long; I would not like to say how long.

1933. In your opinion, is there any other disinfectant, possibly more expensive, that would be more effective for this purpose?—I have not gone into the question. I think carbolic is sufficient.

1934. You are not acquainted with formalin as a disinfectant?—I have had no practical experience of it.

1935. (Sir Charles Rose, M.P.) Did I understand you to say that since 1903 no cases of foot-and-mouth disease have been detected at the port of landing?—1903.

1936. These lairs at the port of landing are not used for any other purpose in the interval between the arrival of cattle-ships?—No, sir. They are completely isolated.

1937. Have you any means of ascertaining whether a cargo of diseased animals is on the way and about to arrive? I rather gathered from something you let drop, that you had some preliminary notice?—As a rule we have not, but occasionally we have had.

1938. Would you have any power to refuse the ship landing, till the cattle were destroyed, under your present authority?—I do not think we have power to prevent landing under the present Order.

1939. They would have to land in the ordinary way and take the diseased animals out? You could not refuse contact with the shore?—I do not think we could; I am not quite clear about that. That is a legal point. As a matter of fact, they are a good deal safer in the Foreign Animals' Wharf than they would be on the ship.

1940. These certificates that you do not attach any value to; you are speaking of 25 years ago?—More than that.

1941. (Mr. Field, M.P.) Is it within your knowledge that some years ago in Liverpool—because I happened to be in Liverpool at the time—some diseased cattle came and the vessel was sent out, and was obliged to dispose of them outside?—I do not remember that.

1942. (Sir Charles Rose, M.P.) You have no experience as to the value of the certificate at the present time?—The American certificate?

1943. Yes?—I do not know whether they actually bring a certificate.

1944. Do all importers insist upon this certificate being attached?—I do not know.

1945. Is it not part of the ship's documents?—I do not think it is.

1946. (Mr. Field, M.P.) I thought it was?—I do not know about that.

1947. (Sir Charles Rose, M.P.) It used to be; it used to be attached to the bill of lading?—In the old days—in the Continental days—it used to be attached to the ship's papers, but whether it is now on the Canadian ships and the United States vessels I do not know. They do not come before our inspectors now.

1948. I suppose it would be quite possible in our own Colonies, and possibly in the Argentine, to get some reliable certificate from a proper authority that a proper investigation had been made before they were put on board?—I believe the Argentine now has some system of inspection at the ports.

1949. You did not mean in what you said about these certificates to be quite as sweeping, applying to all countries as being absolutely of no value?—I do not say it is of no value; I merely point out what value it was 30 years ago in connection with Continental cattle.

1950. Twenty-five years ago. You do not mean to say more stringent steps are not taken at the present time?—I do not say anything at all. It is for members of the Committee to form their own opinion.

1951. Are you satisfied that no recent cases of foot-and-mouth disease that have broken out in this country

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have been caused in any way by the importation of cattle?—I am quite satisfied.

1952. So we could dismiss that element of danger?—Of that I am thoroughly satisfied.

1953. And that the precautions you take now under authority are quite sufficient to prevent any diseased animals with foot-and-mouth disease coming in?—Properly carried out, they are.

1954. But you are satisfied there is little or no danger with the present regulations and restrictions of the disease coming into this country through the importation of cattle?—Yes, sir.

1955. (*Chairman.*) Under the present regulations?—Under the present regulations properly administered.

1956. (*Mr. Field, M.P.*) As a matter of fact, all the cattle that come in are supposed to be healthy; the imported cattle?—Yes, sir; they are supposed to be.

1957. From any country; from America and Canada where you receive cattle from at the present time? You receive none from the Argentine and none from the Continent?—No; they are not allowed.

1958. As matter of fact—because I happen to know about these foreign cattle-lairs—they do not come into contact with our cattle at all?—Not at all.

1959. Good, bad, or indifferent, in any way?—No.

1960. And the men that are engaged in the trade are specially engaged in the trade, and have very little to do with the killing or the handling of cattle?—That is so.

1961. So that what you may call a system of contact between the cattle that are imported and our own native cattle does not exist?—Not to any great extent.

1962. Not to such an extent as in any way would be likely to carry infectivity, even if cattle were diseased?—No; if cattle were diseased the men engaged in the trade would not have an opportunity of going among the animals until we had already discovered they were diseased, and then, of course, we should see before they went out of the place that they were thoroughly disinfected.

1963. (*Mr. Richardson Carr.*) Following up what you have said, I take it you are quite decided in your own mind that it would be quite an unwise thing to admit further cattle into England which has been agitated for in some parts?—As an official of the Board I do not think I ought to venture an opinion on that.

1964. (*Chairman.*) I do not think it is a fair question to put to him?—I have an opinion about it, but I do not think I ought to express it.

1965. Initial precautions against spread of infection: will you go on with that, Mr. Smart? The veterinary staff—Mr. Stockman—gave us a certain amount, but you can perhaps give us something extra to what he gave us?—Yes; in dealing with the procedure at outbreaks to which we go in this country. I have finished with the foreign.

1966. Yes, in this country?—The inspector who receives instructions to go to a reported outbreak of disease, before going on to the infected premises, or before going into the place where the infected cattle, or the suspected cattle, are, puts on overall clothing and indiarubber boots. He first of all makes an inspection of all the healthy animals on the farm, or all in the immediate vicinity of the suspected herd. He then looks at the animals that are supposed to be diseased. If he finds that they are affected with foot-and-mouth disease, the first thing he does is to send a telegram to that effect to the Board; he notifies the Board in the first instance. The next thing is to see disinfectants put down at the entrance to the building or the field where the diseased animals are, and also at each gate leading off the farm or off the premises. That is, if he has disinfectants handy. If not, he sends for some as quickly as he can. Then he gets all the information he can as to movements, and this is where the veterinary inspector and the lay inspector to a certain extent overlap. Very frequently the veterinary inspector is the first representative of the Board there. He is there to decide whether it is foot-and-mouth disease before the lay inspector comes on the scene at all, and then he takes over some of the administrative duties. Administrative work is not quite a veterinary inspector's work, but

he does some of the administrative work that Sir Edward Clarke explained yesterday. He makes inquiries, particularly as to movements on and off the infected premises, particularly movements off, and as to the visits of the veterinary surgeon—as to where the veterinary surgeon has been. There usually is a policeman in attendance. If not, he communicates with the local authority, and asks for as many policemen as he thinks necessary, to watch the entrances to see that nobody goes on or off. Then he warns the owner as to the necessity of isolating himself and his family, and his men, and everybody about the place. He warns him to shut up his poultry and to tie up his dog, and gives general instructions with a view to preventing the possibility of disease escaping from the premises. The veterinary inspector now has the power to immediately slaughter any animal that is diseased, and it is to my mind very important and very useful. The veterinary inspector of the Board, who is first there, has power to arrange with the owner of the diseased animal as to its value and slaughter it forthwith; then, pending destruction, the carcase is "surface cremated," i.e., covered with straw and singed; this acts as a thorough disinfectant.

1967. Does he do that on his own authority without communicating with the Board?—He has power to do it.

1968. And he has power to do it now on his own responsibility?—Yes, on his own responsibility.

1969. That is new, is it not?—That is new. That is the outcome of the Sussex outbreak. I may explain, in a case where he exercised that power, he would take out some evidence of the disease. He would take the tongue and the feet out for subsequent confirmation by the Chief Veterinary Officer if necessary.

1970. (*Mr. Field, M.P.*) He would preserve evidence as it were?—I have given the veterinary inspectors instructions to do that in every case.

1971. (*Chairman.*) Then they are burned?—Yes. Then the lay inspectors come in and they carry on, as Sir Edward Clarke explained yesterday, in the way of getting the cremation pits dug. Then the veterinary officers are free to follow their work of inspecting the animals in the neighbourhood. I may say, in the first instance, they inspect all the animals very carefully and pick out the visibly diseased and have them ready for slaughter. That goes on until all the animals are slaughtered. One veterinary inspector stops on the infected farm and inspects the cattle two or three times a day, and as one drops it is slaughtered straight away. Of course, where we have a large number of sheep and cattle, the slaughter of the whole animals on the farm extends over two or three days, but during these two or three days, until all are slaughtered, they are kept under constant observation by the veterinary inspector, and as soon as an animal shows the slightest symptoms of foot-and-mouth disease it is slaughtered straightaway. We have usually several veterinary inspectors at an outbreak. We get as many as we think we shall want for the outbreak. And then they commence an inspection of animals in the neighbourhood of the infected farm. Those to which their attention is first turned are contact animals, that is, animals that have been moved off the farm and any cows that may have been to a bull. The local veterinary surgeon who has been called in and seen the animals is one of the first men visited. We get from him a statement as to all the farms that he has visited subsequently to his attending the animals on the infected farm, and we follow in his footsteps and inspect all the animals on every farm to which he has been. Then we commence a methodical inspection of all the animals in the surrounding neighbourhood, making the infected farm the centre, and working in a gradually increasing circle as far as we can. To give you some idea of the number of farms and other premises visited: In the Sussex outbreak we inspected stock on 308 premises, and in the Derby outbreak on 433 premises; so it will be seen that we spread our net very wide. The farms in the immediate vicinity of the outbreak, or the farms to which the veterinary surgeon has been, are visited daily for a week. As we get further from the centre of the disease we visit once a week. In some cases we

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may only see them once. The way in which we conduct this patrol work is this: In the first instance, I always ask the inspectors to patrol down wind, and if a stream goes through the premises we follow the course of the stream. We look out for any possible outbreak that may have been carried down by the water flow. Personally, I look on this veterinary patrol work as particularly useful. It is one of the very best things that was ever instituted in the way of dealing with an outbreak of foot-and-mouth disease. It acts as a deterrent to concealment of disease. If any owner had disease on his farm and had an idea of concealing it, the very fact of its being known that a party of veterinary inspectors are going about acts as a deterrent because he knows sooner or later his animals would be seen. That is one great advantage. Another advantage is that in the patrol work we occasionally drop across cases of disease of which the owner did not know; he probably might have discovered them that day, or he might not. But if he had discovered them that night he probably would not have informed the police till next morning, and in such a case we save very valuable time. And further, it is very much appreciated by the farmers in the district for this reason in cases where they want emergency licences, that is, if they have got a cow calving or a sick animal in the fields, and they want to take it across the road or to the house, they are enabled to get a removal licence at short notice. They know that there is a veterinary inspector in the village or will be in the village during the day, and they get an emergency movement licence very speedily without having to go through the usual routine of applying for it. That is very handy for the farmers, and I think it goes a good way towards smoothing down the inconvenience that they feel by the imposition of the regulations generally.

1972. How long has this patrolling been in force?—That I cannot say offhand.

1973. Well, not long, has it?—No, not for very many years.

1974. It is within the last four or five years?—No, sir, it was before that. I think it began in 1900.

1975. Now, in the patrolling this last year in these different outbreaks, did you find any cases through that patrolling?—Yes, sir.

1976. You did?—Yes, sir, cases of which the owner had no knowledge.

1977. Which would not have been found out if you had not done that patrolling?—Well, they would not have been found until later.

1978. But you found them at once?—Yes.

1979. Well, then you spoke about the overlapping of the veterinary inspectors and the lay inspectors?—Yes.

1980. They rather overlap sometimes; does that create any delay?—No, sir; it facilitates matters.

1981. It does?—I used a wrong term in saying "overlapping." It is not that one inspector overlaps the other, but the veterinary inspector on arrival, in the absence of the lay inspector, does some administrative work. Of course, as you quite understand, it is very useful to the chief officers in London to know what sort of an outbreak they have to deal with, and the veterinary inspector, if he is on the spot first, wires to the Board all the information he can get; whether there have been many movements on or off; whether it is likely to be a big outbreak; whether the place is suitable for isolation; he gives any general information that may be useful. That is really administrative work and not veterinary work, and that is what I speak of as overlapping.

1982. (Mr. Field, M.P.) You could not avoid that?—No.

1983. (Chairman.) Then from your experience I suppose you strongly hold to the present area, do you not?—Yes, sir.

1984. Fifteen miles unless in exceptional cases?—Yes; I do not think you can make it 15 miles exactly; it might be 14.

1985. But about that?—About that.

1986. You think from your experience that is the safest area, about that, to put on?—I think it is neces-

sary, until we are perfectly satisfied that we have the disease centres located.

1987. (Sir Bowen Bowen-Jones.) In the case of this immediate slaughter by your veterinary inspector, how do you arrange for the valuation of the animals killed?—Value directly with the owner without the intervention of a valuer.

1988. Without calling a valuer in?—Yes.

1989. And afterwards the valuation is done by an expert?—Yes.

1990. By an auctioneer probably?—Usually an auctioneer.

1991. The valuation always gives satisfaction, I understand?—So I believe, sir.

1992. (Sir Charles Rose, M.P.) Would you explain a little more the procedure in making a first inspection when an outbreak occurs, and the segregating of the diseased animals from the healthy ones; are they all disinfected when they first go into the fields or into the buildings where the diseased animals are, the inspectors, whoever is with you?—He is not disinfected when he goes in; he is disinfected when he comes out.

1993. Yes, exactly; now you go on and make your inspection further afield after that?—Yes.

1994. What do you do then, because you have been in contact with diseased animals?—Ah, but the inspector does not go from those diseased animals and inspect further afield until he has had a very thorough disinfection.

1995. That is what I mean; you are disinfected every new set of animals you see?—He is more than disinfected; he does not go with the same clothes on.

1996. That is what I wanted to get at?—He removes his clothing, which is afterwards disinfected, and puts on clean clothing before inspecting other stock.

1997. Take an original one, where in an outbreak the same man has to separate the diseased animals from the healthy ones?—Yes, sir.

1998. What does he do; what is his condition, and what does he do afterwards when he has got his diseased animals?—We keep him with the diseased animals and if we possibly can we keep him on the premises. We keep that particular man on the premises until the whole of the animals are slaughtered.

1999. In fact he may not go home or anything until these animals are killed?—I think Sir Edward Clarke explained yesterday, we burn his clothes and give him a new rig out.

2000. So that there is no risk whatever of them carrying it from one field to another?—There is very little risk, every possible precaution that we can think of is taken.

2001. It is quite possible that any ordinary man, an attendant or a labourer on the farm, may have been there the night before amongst these diseased animals and gone on to a neighbouring farm without them knowing anything about it?—In such a case we inquire into movement of persons, and follow them, and inspect any stock they may have been among.

2002. (Mr. Hinds, M.P.) Did the Board inspector have the power to slaughter in the Somerset case, the one we had this morning, if he saw it at first?—Yes, he had the power. I do not think it was exercised in that particular case.

2003. (Mr. Bathurst, M.P.) Where you find a stream passing through a farm, are measures taken to prevent refuse from the farm being thrown into the stream?—Yes, sir, refuse from anywhere around the diseased animals.

2004. Where you find a farm upon which an outbreak occurs with a large number of hares upon it, do you take any steps at all to prevent the spread of the disease through the medium of the hares?—We should do. We have not met with a case recently, but we did that in the outbreak in Kent in 1891 or 1892. Then, it was suggested that the hares carried it and the farmers shot them as well as they could.

2005. I have in my mind outbreaks in Somerset and Wiltshire where it is nothing extraordinary to see from 400 to 500 hares on one farm on a summer's evening?—We bore that in mind in Sussex; I was going through one infected field after the animals were killed and I saw

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a hare there and I told the farmer he had better get it shot, and he got it shot.

2006. You do take steps to destroy the hares as far as possible?—Yes.

2007. Where they are plentiful you admit it might be a fertile source of the spread of the disease?—Yes, quite a likely source.

2008. As a matter of fact, are they plentiful in this particular district, in Somerset?—No, sir.

2009. And with regard to rats, if you have reason to believe that rats are particularly plentiful on farm premises, are any steps taken to poison them?—Yes, on infected premises poison is put down for them.

2010. Just one question with regard to this 15-mile limit. In your own experience what is the greatest distance from a previous outbreak that fresh cases have occurred, that are traceable to that outbreak?—In the recent cases two miles. I am leaving out the last case in Somerset, that was 10 miles away, but there was no evidence of connection between the two outbreaks.

2011. Have there ever been, in recent history, to the knowledge of the Board, cases a distance of, say, as much as 10 miles from the original outbreak, that have been traceable to it?—I do not call one to mind.

2012. (Chairman.) May I ask you a question about that? Do you remember the case in Norfolk?—No; that was at the time I was at the foreign animals' wharves; I was not engaged in field work then.

2013. (Mr. Nunneley.) I have just one thing to ask on the Somerset cases, about your getting notices from the local veterinary surgeons, many of whom do not know the disease. Do you send any circular or any instructions to either your local veterinary surgeons or to the ordinary local veterinary surgeons, as to the symptoms of the disease or anything of that sort?—No, sir, not to the local veterinary surgeon; the very fact of his being a veterinary surgeon should be *prima facie* evidence that he knows all about the disease.

2014. But many of the younger ones have never seen it?—This leaflet, I should perhaps have mentioned, is left on each farm we go to. "Foot-and-mouth disease symptoms.—In the early stages of the disease the animal frequently smacks its lips and shows by the movement of its tongue that the mouth is the seat of suffering, and the saliva flows freely from the mouth. An examination of the mouth shows the existence of vesicles on the tongue and on the inner part of the upper lip and on the pad. Often the vesicles are broken, exposing a red surface beneath. The animal seldom refuses food, but rolls it about in its mouth, and often drops it instead of swallowing it. In most instances the feet are affected as well as the mouth, and blisters will form between the toes and on the heels between hair and hoof, causing the animal to walk tenderly, and frequently to catch up one foot after the other and shake it as if to dislodge something which was producing pain. In milch cows the teats are occasionally affected with vesicles, especially at the opening of the milk duct, which often leads, when in this situation, to sores and crusts being formed, preventing the ready flow of the milk. The disease frequently exists simultaneously among the cattle, sheep, and pigs of the farm. (Signed) T. H. Elliott, Secretary, Board of Agriculture and Fisheries, 4, Whitehall Place, London, S.W., February, 1908."

2015. I mean ordinarily, would it be any use sending something of this sort to all veterinary surgeons in the country, say once in five or ten years, with a reminder that in the case of any suspicious case, they ought to communicate with you at once. You mentioned in this very case, this veterinary surgeon in Somerset did send you notice?—Yes, sir.

2016. But you say he went home and read it up? (Mr. Richardson Carr.) I did suggest that to Mr. Stockman, but he thought it would hurt the veterinary surgeon's feelings?—That is the idea.

2017. (Mr. Nunneley.) You do not do anything of the sort?—It ought not to be necessary.

2018. (Mr. Morrison.) I suppose you have no difficulty in enforcing all your regulations?—No, sir, no real difficulty. We have a little friction sometimes, but very little. I must certainly say that the farmers stand the regulations very well, and with very little

complaint. The bulk of the complaints that I find when I am patrolling—I see a good deal of the farmers then and when they come to apply for a licence—come from the young men. There is some excuse for them. All they know of the disease is what they have either read in some agricultural journal, or they may have had a lecture in some agricultural college. They know that it is not a fatal disease; the worst that can happen to them, from their own point of view, is that they may lose 1 per cent of their cattle; therefore they say: "Why put us to all this trouble." But the men who have had it 30 or 40 years ago, or had it two or three times, are well satisfied with the regulations. They know what it is to have an outbreak of foot-and-mouth disease.

2019. Would it be an advantage to you if a slaughterer, finding any symptoms of disease, was compelled to report?—I think it would be an advantage.

2020. You have never had any actual result following from the contravention of that?—No, from contravention of the Notification of Disease Order. Under the Foot-and-Mouth Order any person having under his charge an animal that is diseased is compelled to give notice, and under an Order passed recently any veterinary surgeon knowing of the existence of disease is obliged to report it. But I think that might very well be extended to knackers and slaughtermen.

2021. Do you generally order all the dogs in the neighbourhood to be tied up, or only on the farm where the outbreak occurs?—In the immediate vicinity.

2022. Supposing there was an outbreak where hares were very numerous, you would not proceed to shoot them, would you?—I should suggest that they were shot.

2023. But would that not drive them off to carry the disease?—No, I do not think so; if the man held the gun straight it would not.

2024. I was going to suggest that in a case like that erecting wire-netting would be quite easy?—That was done in the Ripon case, for rabbits. There were a good many rabbits on the place. The second infected place was wire-netted around. May I correct an answer I gave to a question you asked me, sir; a question as to how far apart we could connect one outbreak with another?

2025. (Chairman.) Yes; Mr. Bathurst asked you that?—I said two miles; I should have said four.

2026. (Mr. Field, M.P.) Are you satisfied that the patrolling ought to be carried on at so great a distance as 15 miles?—We do not get the patrolling quite so far as 15 miles. As a rule we do not get that far, and I think it is hardly necessary to patrol 15 miles. We patrol individually the farms perhaps within three or four or five miles, and that takes several days to do.

2027. I understand the difference between patrolling the farms and looking after them, and, of course, stopping the movement of cattle. That is quite a different thing, and that is the reason why I asked you the question. I quite agree that your limit, 15 miles, is a correct one, but I thought the patrolling of farms to the extent of 15 miles would give you an enormous amount of trouble?—We never get so far as that.

2028. Just one other question. Do you find now, as a rule, that the agriculturists are prepared to give you the necessary co-operation to carry out these regulations?—Yes, sir, they are. The agriculturists, I must certainly say, take it very well, and give useful assistance.

2029. On the whole?—On the whole.

2030. Just one other question, and then I am done. It appears to me there is a good deal in the suggestion which was made by one of the members of the Committee with regard to the attention of the veterinary surgeons being directed to this foot-and-mouth disease. Supposing they do not know it, they certainly ought to communicate with headquarters where they have a suspicion about it?—Well, I think in the majority of cases that would be done. In fact, I think Mr. Stockman pointed out that there is rather a tendency to over-report than under-report. But there is a danger in over-reporting. It is a very good thing, and very useful, but if a man reports a case and it is ultimately decided not to be foot-and-mouth disease, the next

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time he may really drop across foot-and-mouth disease, and he may think, "I made rather a fool of myself a fortnight ago or a month ago, I will not report this," and there is just that danger.

2031. (*Chairman.*) One more question in conclusion. I suppose from your evidence that you bear out what Sir Edward Clarke said yesterday, that there has been all through these outbreaks, and before, an amicable and a pleasant feeling between the local authorities and our own Board?—Oh, quite.

2032. They work well together?—They work very well together, and practically without a hitch.

2033. (*Mr. Bathurst, M.P.*) There is just one question I should like to ask. With regard to the veterinary inspectors of the local authorities, would it be advisable, in your opinion, that these officials should be appointed by the Board itself, or that their appointment should be confirmed by the Board after a review of their qualifications?—I think it would be advisable that the Board should have the power of veto in the matter.

2034. (*Mr. Field, M.P.*) May I ask you this question, is foot-and-mouth disease indigenous to this country?—First of all?

2035. Yes?—I do not think it is indigenous to this country.

2036. Have you any theory as to the origin then of this disease? We have no direct proof of the infectivity from foreign sources?—I do not know that I have quite got so far as having an opinion about it, but something has been said about the local opinion as to its being due to the rhines being cleaned out, and to the interference with old buildings. Well, for some time past I have had a very strong feeling that there may be something in that. Of course, it is asking a good deal to believe that the germ of the disease will live 30 years, but I think there is not the slightest doubt that the germs do live for a good deal longer than is generally supposed, and in looking back through old reports of the Privy Council Office, I have been struck with the way in which this recent outbreak has behaved itself as compared with some previous outbreaks.

2037. (*Chairman.*) Which outbreak are you talking of now?—I am speaking of the outbreaks last year.

2038. (*Mr. Field, M.P.*) Generally?—They have been isolated outbreaks. They have not been continuous in one district; they have broken out in Middlesex, Sussex, Surrey, Derbyshire, and Somersetshire. In 1885 we had outbreaks that pretty well followed on those lines. The Chief Veterinary Officer in his report for that year says: "The most remarkable feature of the 1885 outbreak was the sudden appearance in isolated districts, each outbreak being remote from that which preceded it. Careful inquiry brought out that in 30 outbreaks disease had existed on 10 farms during the recent outbreak, that presumably would be the outbreak in 1883, so out of 30 outbreaks in 1885 it appeared on 10 farms where it had appeared in 1883."

2039. Previously?—Previously, and of three others on premises closely adjoining. In 1885 there was one outbreak in Bedfordshire, 10 in Cheshire, one in Leicester, one in the Holland division of Lincolnshire, three in the Kesteven division of Lincolnshire, eight in Norfolk, one in Nottinghamshire, two in Rutland, one in the North-east Riding, and two in the West Riding of Yorkshire.

2040. (*Chairman.*) Is that a report from Professor Cope?—1885 was Mr. Cope's report.

2041. (*Sir Bowen Bowen-Jones.*) Are you aware that in 1867 and 1870 the disease swept the country so that no farm in Great Britain would be a farm in which the disease had not existed before in the event of any subsequent outbreaks?—Probably so.

2042. (*Mr. Field, M.P.*) It was all over Ireland too?—Yes.

2043. (*Mr. Nunneley.*) It would be difficult to find a farm on which it had not existed within the last 40 years?—Very difficult.

2044. Does not your opinion rather conflict with Mr. Stockman in that?—Mine is not quite an opinion.

2045. Your suggestion?—It is suggested locally. I

found in several places the local opinion was that it has either been due to the cleaning out of the old ditches, or the taking down of the old thatched buildings.

2046. (*Mr. Field, M.P.*) Would there be anything in the field, the herbs, and picking the clover, or feeding on certain farms, that might produce this?—I do not think so.

2047. (*Mr. Nunneley.*) This disease cannot come spontaneously from any condition of the cattle, or feeding, or the condition in which they are kept?—I do not think so.

2048. It must be brought by infection, you think, from elsewhere?—Purely infection.

2049. Mr. Stockman said the same, I put it to him?—Out of eight recent outbreaks five have been associated with the pulling down of some old buildings or the cleaning out of the rhines where disease had previously been existing.

2050. Do you mean those outbreaks in Somerset; of those eight?—Not all in Somerset, but the recent outbreaks in Somerset, Surrey, Middlesex, and Sussex. But I merely mention that because it might be of some interest to the Committee.

2051. (*Mr. Bathurst, M.P.*) Apropos of that, in your opinion, much has yet to be learned by research and otherwise to ascertain the vitality of the germ of this disease?—Precisely, and to my mind one of the most important things that investigation can show us, is the period of vitality of the germ. I think there are three important points: First of all, the period of vitality of the germ or spore; secondly, the period at which an animal, having become infected, is capable of transmitting the infection; and, thirdly, the period at which, after recovery, it ceases to be a source of danger. I think those are the three most important points, and they are the three points upon which the veterinary profession knows but little.

2052. And the three points without knowledge of which it must be extremely difficult for anyone to report as to the source of these outbreaks?—Yes. I was told by a veterinary surgeon, a very competent man, that he knew of one case in which it was proved, as far as proof can go, that the disease germs lay dormant for about 11 months.

2053. (*Mr. Nunneley.*) Of this foot-and-mouth disease?—Foot-and-mouth disease.

2054. (*Mr. Morrison.*) Can you suggest any practical method of setting about ascertaining these scientific facts of which we have no knowledge?—Nothing except experiment.

2055. An experimental station. Do you think that a practical suggestion?—Under certain conditions.

2056. (*Mr. Bathurst, M.P.*) I should very much like to ask you, do you think it would be safe, or comparatively safe, to start an experimental research station in an island off the coast of this country?—Well, that is a question that had perhaps better be left to the professional advisers of the Board.

2057. You would rather not express an opinion upon that?—I would rather not express an opinion upon that.

2058. (*Sir Charles Rose, M.P.*) You think, that whatever steps are taken with regard to importation, we should always be liable to periodic outbreaks?—That is my opinion.

2059. Whatever precautions we may take?—I think, from the history of the disease not only here but also in Holland, from time to time this country may be brought face to face with outbreaks of foot-and-mouth disease.

2060. From germs then in the country already?—Well, I will not perhaps go quite so far as that, but I have a very uncomfortable feeling that it may be so.

2061. (*Chairman.*) Would you rather not say that we shall always be liable for that on account of other countries being full of this disease?—Well, of course, there is always that danger, particularly with the importation of hides.

2062. (*Sir Charles Rose, M.P.*) I put just the reverse, apart from the danger of it being introduced

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into this country, you still think we shall always be liable to periodical outbreaks?—I am afraid so.

2063. Even though there was a distinct barrier round this Island?—I am afraid so.

The Witness withdrew.

Mr. A. C. WILD, M.R.C.V.S., called in and examined.

2065. (*Chairman.*) I think you are the Chief Veterinary Inspector of the Surrey Local Authority?—Yes, that is so.

2066. And your headquarters are at Woking?—Yes.

2067. You are head of all the inspectors in Surrey, are you not?—Yes.

2068. First of all, you are appointed by the Local Authority of Surrey, I believe?—Yes, by the Surrey County Council.

2069. And your appointment is not approved or sanctioned by the Board of Agriculture; it has nothing to do with them; it is simply by the Surrey County Council?—No. Nothing to do with them; it is simply by the Surrey County Council.

2070. And I take it you hold full certificates from the veterinary profession?—Yes.

2071. As regards this case in Surrey, at Chobham, will you tell the Committee when you first heard of this case?—Of course; I may add, that I am in private practice as well as holding the appointment.

2072. Yes, naturally?—The history of the Chobham case is this: The bailiff from this particular farm came to the surgery, and my assistant saw him. He said that he wanted a bottle of gargle for one of the beasts that he thought had hurt his mouth. He had that, and no more notice was taken of it until I happened to be passing the farm about two days after.

2073. One minute. Can you tell us the date that this was reported to your assistant?—The outbreak was on March 9th, and, to the best of my belief, it was two days before.

2074. On the 7th?—On the afternoon of the 7th.

2075. Before the outbreak?—Before the outbreak.

2076. On the 7th this bailiff of this farm came to your surgery and asked for a bottle of gargle?—Yes.

2077. Quite so?—And the assistant was passing the next day and he looked in, and he reported to me that he thought a bullock had hurt its mouth; it had got a little eruption. On the 9th I was passing the farm, and I thought I would look in. When I got into the cow-shed I heard several of the beasts smacking their mouths in the characteristic way that they do with foot-and-mouth disease, and I then had one turned round and examined it, and found that it was suffering from foot-and-mouth disease. I immediately went off to the telegraph office and telegraphed to the Board of Agriculture, and then went on to the police-station and got the police-sergeant to prepare notices, and these notices were served, some of them the same evening and others the next day, on all surrounding farms. That would be what is called the Form B prohibiting the removal on or off of any beasts from the premises.

2078. On your first visit to that farm you had not the slightest doubt in your own mind that the animals on that farm were suffering from foot-and-mouth disease?—I was perfectly certain.

2079. You had seen foot-and-mouth disease before?—I had seen foot-and-mouth disease before.

2080. And you had not the slightest doubt?—No; I had no doubt about it at all.

2081. And your opinion was confirmed, I presume, by the veterinary officer of the Board of Agriculture when he came?—Yes, on the same day the veterinary officer of the Board of Agriculture came down, and he agreed, and the next day Mr. Stockman came down, and he also agreed that it was foot-and-mouth disease.

2082. Did you, when you looked in that day, as you have told the Committee, give instructions to the owner about taking proper precautions?—I gave instructions to the bailiff. The owner lives some distance away, but I gave instructions to the bailiff that he was on no account to move anything off the farm, and he was not to go off the farm himself until further notice.

2064. (*Mr. Field, M.P.*) Could you give us any idea of a predisposing cause in any of these cases except the length of life of the germ or the spore?—No, sir.

2083. And did you also give instructions that the men, or the man who was looking after this stock, were to keep to the farm?—Were to keep to the farm, yes. The same day, after the arrival of the veterinary inspector from the Board of Agriculture, we all went to the police-station and got these notices served all round, and we had a policeman stationed on the farm to see that no stranger or any person came in or out.

2084. Really, as a matter of fact, you took every possible precaution that you could take till the Board of Agriculture inspector came?—Yes; I took every precaution without waiting for the Board.

2085. Without waiting for the Board?—Because I was quite certain it was foot-and-mouth disease.

2086. You had no doubt in your own mind it was a case of foot-and-mouth disease?—I had no doubt, and I then took every precaution to prevent the spread.

2087. Did you find out at your first visit there what animals had been brought on that farm?—I knew that the farm had been re-stocked quite recently, mostly with heifers.

2088. Bought from some distance?—Bought from different parts.

2089. Different parts of Surrey?—Different parts, yes; I do not know that they all came from Surrey, but the latest lot came from Godstone in Surrey.

2090. From the market?—Privately.

2091. You had had no outbreaks in Surrey for some long time before this outbreak, had you?—No, not in my recollection.

2092. Not for some years?—Not for many years, no.

2093. Did you make inquiries as regards any food-stuffs or manures that had been brought on to this farm?—Yes, we made inquiries in regard to what food the animals were having, and then the Board of Agriculture stepped in, and they thought it was not advisable for veterinary inspectors of the local authority to go near the premises, so after that I practically had nothing to do with it.

2094. They thought it advisable that the veterinary inspector of the Board?—Of the local authority. Directly the inspectors of the Board arrived on the scene they thought it advisable that the inspector of the local authority should keep away from the premises.

2095. Quite so; then, as a matter of fact, after the Board had taken over charge of these premises and made their area or whatever it was, you, as the local authority, had no more to do with it?—Just so; not any more than I made it my business to go around and see several people that kept private cows that the Board very likely would not hear of in the district, and examine them.

2096. You did?—Yes.

2097. You did that on your own responsibility?—On my own responsibility, yes. I gave the Board of Agriculture a list of all the farmers round about, and then there were a few others that struck me, a few people who kept perhaps a couple of cows for their own purposes in the neighbourhood, and I went round to all of these.

2098. Then, as a matter of fact, this outbreak was the only outbreak in the district?—The only outbreak in the district.

2099. And they made the area, I suppose, of how many miles radius; do you remember by any chance the big area?—The big area; 14 miles, I think, something of that sort: the first outside area.

2100. Anyhow it was stamped out in the course of a short time?—Yes, it was stamped out as soon as all the animals were slaughtered.

2101. And you have had no more recurrence of the

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disease since?—That is so. You see there are the farm buildings and the farm-house, which belong to different people. I have made inquiries at the farm-house, because I know that the gentleman very frequently visits France and Germany, France especially.

2102. What, the owner?—The owner, yes. He is frequently abroad, and I made inquiries just for my own satisfaction as to whether he had received anything from France lately, and we found out that he had received some fowls, I think it was, imported fowls packed in a hamper.

2103. Foreign fowls, from France?—Foreign fowls, from France, and I was very much inclined to think that the outbreak was possibly due to some of this packing having come in contact with the neighbouring farm-yard, been blown over or something of that sort.

2104. What were they packed in; were they dead poultry?—I could not tell you because Mr. Smart investigated that, and he, I believe, found the remains of the packing there.

2105. Was it dead poultry or live poultry?—I should imagine it was live poultry.

2106. (*Mr. Richardson Carr.*) He told us it was live poultry?—It was live poultry, I believe.

2107. Because he saw the birds running about?—Yes.

2108. (*Chairman.*) How long before this outbreak had these poultry been brought on to that farm?—As near as I could make out, about a couple of weeks.

2109. Do you know what head of poultry?—I could not say.

2110. And you do not know what they were packed in?—I do not know from personal observation, but Mr. Smart told me afterwards that they were packed in ordinary packing, hay I should say.

2111. Hay and straw?—Ordinary hay and straw; ordinary packing.

2112. Do you know at all what became of that hay and straw?—I do not know what ultimately became of it.

2113. You do not know if it was put in the yards?—The birds were unpacked, and, of course, in unpacking a certain amount of it is sure to have been spilt. But the greater portion of the litter was still in the hamper when Mr. Smart discovered it.

2114. Oh, it was?—Yes.

2115. It had not been put in the yard?—No, it had not been put directly in the yard. Of course, in unpacking poultry, there is sure to be a certain amount of hay hanging to them and it is quite possible it might have blown over into the neighbouring cattle-yard, which was only a few yards off.

2116. And these poultry were let free in the farm after that?—They were let free in the farm, but not into the cattle-yard.

2117. But the chief thing I want to find out from you is—I am afraid you cannot tell me—whether the hay and straw which these birds came in, was put in the yards at all? As far as you know, none of it was?—None of it was put in the yards.

2118. But you can say some of it may have been spread about?—It is quite possible that some of it may have been spread about.

2119. This owner of the farm, what feeding stuffs had he had upon the farm; did you hear that?—The latest lot he had had was ordinary cake, linseed cake, and dairy cake.

2120. Where did that come from, did you hear?—That came from a local man by the name of Benham, and he only sold a part of this particular consignment to Mr. Greenwell, the owner of the cows, and the other went to several farms in the neighbourhood.

2121. And there was no disease whatever?—And there was no disease whatever.

2122. Were there any other feeding stuffs brought on to the farm from outside?—No, except oats, which, of course, were not given to the cows; they were given to the horses. That was the only cattle feeding stuff that had recently been brought on.

2123. Now what about manures, were any manures brought on?—I do not think so; no, not that I know of; I could not answer for certain.

2124. Then, as a practical man, you would possibly put this outbreak down, it might be, to these foreign fowls which were brought in?—I think it quite possible.

2125. From France?—From France.

2126. And I understand you to say they had been a fortnight on the farm?—Somewhere about a fortnight or so.

2127. (*Sir Bowen Bowen-Jones.*) You say it is possible; do you think it probable, that a hamper that had straw remaining in it in a separate yard divided from the farm, and fowls divided by a wall from the farm would produce that disease?—I do not see anything unreasonable in supposing that some of the litter may have been blown over into the neighbouring cattle yard. I think it is within the range of possibility.

2128. It may be within the range of possibility, but beyond the probabilities. I think you cannot assign any other cause for it?—No.

2129. And, therefore, you fall back on that?—As a suggestion.

2130. (*Sir Charles Rose, M.P.*) Do you know of any old buildings that had been pulled down quite recently in that part?—Yes, I believe the roof of the barn had been recently pulled down and rethatched.

2131. Only the roof?—The roof part.

2132. Have any ponds or ditches been recently cleaned out after having been for many years?—No, I do not think so.

2133. Not to your knowledge?—No, of course many of the old farm hands round about there attributed this outbreak to the old thatch, and one old man said that he recollected there was a number of cases on this particular farm when he was a boy.

2134. I was going to ask you, could you tell us what the local people said about this outbreak?—The local people attributed it to the thatch, to the removal of the old thatch.

2135. They think it has been lying there dormant all this time?—They think it has been lying there dormant all this time.

2136. When was that rethatched did you say?—Very shortly before the outbreak.

2137. When was the old thatch put up; how many years before the outbreak?—Well, I should say it must be between 30 and 40 years.

2138. (*Mr. Hinds, M.P.*) Was this infected animal a recent purchase?—It was one of the lot that came from Godstone. Well, it had not been on the farm a great while; several months.

2139. Was there any refuse sent from the house to the farm?—No, I do not think so. You see they belonged to two different people.

2140. I did not know whether some of the house refuse would go to the pigs?—No, it had no business to. I mean to say there was no occasion to do so. This man who lives next door is a breeder of goats; he has a lot of goats, and they were not affected at any time.

2141. (*Mr. Bathurst, M.P.*) You are an M.R.C.V.S.?—Yes.

2142. You have seen foot-and-mouth disease before?—Yes.

2143. Where had you seen it before?—At Deptford Cattle Market.

2144. (*Mr. Nunneley.*) In the foreign cattle?—In the foreign cattle there.

2145. (*Mr. Bathurst, M.P.*) You acted as an inspector?—No, I went down as a student. At the time I was a student at the veterinary college from 1879 to 1881. There was foot-and-mouth disease present at Deptford, so it was the practice to take us down in divisions.

2146. (*Mr. Field, M.P.*) To spread the disease; no precaution was taken at any rate.

2147. (*Mr. Bathurst, M.P.*) Perhaps I need hardly ask, I was just going to: do you happen to know whether similar opportunities are given to students now?—No, oh, no.

2148. I suppose, as a matter of fact, amongst your colleagues there are very few who really have seen cases of foot-and-mouth disease?—All the younger men have not seen foot-and-mouth disease, no.

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2149. And without seeing cases of foot-and-mouth disease do you think that a man who has received the usual college instruction could diagnose it?—Well, I think he should do so if more than one animal is affected.

2150. Otherwise it is possible to confuse it with other diseases?—Yes, it might be.

2151. With regard to those fowls. Do I understand that they had had no access to ground which had been subsequently trodden by cattle?—Well, they might have done. I believe they were put along with the other poultry in the yard, and they could get out into the neighbouring fields.

2152. Oh, they could?—Where the cows had pastured.

2153. So it is quite possible that if they had carried the germ, say on their feet, from this packing material they might have infected the pasture?—They might have infected the pasture.

2154. And so infected the cattle?—Yes.

2155. As regards this linseed and compound cake you refer to. Did you happen to notice the bags which contained it?—No, I did not personally, because Mr. Smart went round to the corn merchant.

2156. You never suspected bags as a possible source of the conveyance of the disease?—No; really I had very little to do with that. It was taken out of our hands altogether when the Board of Agriculture appeared on the scene.

2157. When you speak of this old thatch which had been pulled down, do I understand the thatch was lying in the cattle-yard; the old thatch which had been removed from the roof, was it lying in the yards or was it where the cattle could get at it?—A certain amount is sure to have been spilt in unthatching, but I do not know where the bulk of it was put; I did not see the bulk of it.

2158. (*Chairman*). Was it put as litter in the yard?—It was not put as litter in the yard; no.

2159. (*Mr. Bathurst, M.P.*) I was going to ask you what happened to the bulk of it; was it burned?—I could not tell you; the information did not leak out until some time after the outbreak; at least, I did not hear of it till some time after the outbreak.

2160. Have you any ideas of your own as to the length of latency of the disease?—I could not say at all.

2161. You would not like to suggest this, that it could remain latent for 20 or 30 years?—I should not think so, but still I have nothing to go on.

2162. Is any instruction given at the Royal Veterinary College upon such a subject as that in the light of modern knowledge?—Well, it would be the duty of the bacteriologist to instruct.

2163. You would not have been told what in the opinion of the veterinary authorities is the length of incubation of the disease; of the time of incubation or the latency of the disease. It is not a subject upon which you would receive instruction?—Not in my time. Of course, I cannot say what instruction they receive now. We had, as students, a thorough grounding in the symptoms of disease, but at that time bacteriology was known but little.

2164. (*Mr. Richardson Carr*). When your assistant went on to the farm to see this bullock that had a sore mouth, he did not, of course, recognise that it was foot-and-mouth disease at all?—No.

2165. Of course, he would go to any other of your clients to see their cattle without any precautions at all, really?—He only goes to horses and cattle when I happen to be out of the way; he is for dogs—a dog specialist—so that, fortunately, he did not visit any other farms.

2166. And then when you went next day; you looked in yourself to see?—Yes.

2167. And you thought it was foot-and-mouth disease?—Yes, I had no doubt it was foot-and-mouth disease.

2168. Did you take any precautions then before you went on to the next?—Yes, I had a mackintosh on. It was a rainy day, and I drove straight home, and I disinfected the mackintosh and the boots.

2169. You took every precaution?—I took every precaution before visiting any other place.

2170. Was it ever known on this farm; you say it was?—Yes, it was known on this farm 40 or more years ago.

2171. On the question of it being in the straw of the thatch, that would mean it would lie dormant for 30 years?—If there is anything in that point.

2172. Did this farm have any London manure down?—No, he uses his own manure. The owner has recently started dairy-farming on this farm; he has only had it a short time.

2173. They did not use any peat-moss or anything like that?—No, I think not.

2174. You agree it is not a disease which could come by itself; it is an infectious disease?—It is an infectious disease.

2175. Purely an infectious disease?—Yes.

2176. And very infectious?—Yes, extremely infectious.

2177. And in face of that you think it would be a very unwise thing to attempt to import store-cattle from abroad into this country?—From any country where it was known to exist, decidedly.

2178. I mean that.—Yes.

2179. You think that would be very unwise?—Yes.

2180. (*Mr. Nunneley*.) You say your assistant saw this beast. I do not know whether there was more than one at the time?—One at that time.

2181. He saw it on the 8th and he did not recognise the disease?—That is so.

2182. You recognised it the moment you saw it on the 9th?—I recognised it, yes.

2183. Should you have expected your assistant, who had never seen it before, to have recognised it then?—I think I should on the 9th because there was more than one animal affected. I do not think a man who had no experience of the disease would be likely perhaps to recognise it if it were the one case only, but if there were several cases he would be, or should be, put on his guard at once.

2184. You would not be surprised at any ordinary country veterinary surgeon not recognising it until it had got a good hold?—That is so, yes.

2185. Were they milking cows that had got it, or bullocks?—Some heifers; they were all milk stock on the farm with the exception of one bull, roughly speaking, about six cows in milk and the others were all heifers, due with a first calf.

2186. Was he sending the milk away at the time?—He was sending the milk away.

2187. To London or somewhere?—He was sending it to a local dairy, and I immediately went round to the local dairy people and told them that they must not have it.

2188. You stopped that?—That was stopped next morning.

2189. But still that was sent for a day?—It was sent for a couple of days before.

2190. No harm followed that?—No harm; no.

2191. With regard to the fowls: They did not belong to the same owner, I think, as the owner of the cattle?—No, they belonged to the next-door neighbour.

2192. And the owner himself did not go among the cattle?—No.

2193. You spoke of a wall there; it is not a very high wall I suppose; nothing but what the fowls or the litter could get over?—No, it is not very high.

2194. Did the fowls, as matter of fact, go over it?—I think not, because the fowls usually went out into the back part of this house. You see the house might be there, and then the farm was next door, there, and then there is a yard where the man has his breeding-stables for goats, and he has leading out of this yard a small field.

2195. Do you know, as a matter of fact, that fowls do go into the same field as the cattle?—Oh, yes. They could do so; there is nothing to prevent them.

2196. Do you know how many fowls they brought from France; was it only just one hamper?—It was only just one hamper, I believe.

2197. When they were unloaded, as you say, taken

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out of the hamper, the top would be opened and the hamper would be just turned over, and the fowls allowed to come out as they liked?—Yes.

2198. In all probability some of the litter would come out?—Bound to, I should say, some of it.

2199. With regard to the outbreak; it was in March, I think?—Yes; March 9th.

2200. Do you know how long before the old thatch had been taken off?—I could not say exactly, but not very long; perhaps two or three months.

2201. Should you have noticed it if it had been put in the litter in the yard, because that is the usual thing with old thatch?—It would have been presumably.

2202. You cannot yourself say it was not?—I cannot say it was not; no. Some of it was bound to. Even if the greater bulk had been removed, some of it would have been bound to have tumbled into the yard.

2203. Still, you do not yourself lay it to the thatch at all?—No; I really do not lay it to anything. Unless we know the history of the germ we are working entirely in the dark, absolutely. Of course, most of the text-books state that even in the fleece of sheep that suffered from the foot-and-mouth disease, after three weeks' time the fleece is not infective. That is stated in most of the text-books. And also the virus in an infected animal loses its virulence in a matter of 14 days. But whether that is true or not I cannot venture an opinion. That is what is stated in Fredberger and Fröhner Pathology.

2204. (*Mr. Morrison.*) Is your assistant a fully-qualified man?—No, he is not.

2205. And, therefore, it would be quite excusable, suppose he had not diagnosed it correctly?—Yes.

2206. You say that at once you took the precautions that were necessary, one or two of them; did you shut up the fowls?—No; because, you see, that was next door; not on the farm.

2207. But you had authority, had you not?—Notices were served on the next-door people, not especially with regard to the fowls, but the ordinary Form B was served, that no animals could be permitted to go on or off the premises. That was served the same evening.

2208. Did you notice that the fowls were ultimately shut up?—I believe so.

2209. Then, did you order the dog to be tied up?—They have a large number of dogs there, but they are all in kennels, and they are only exercised in their own yard; and the goats were not permitted to leave their stables; they were all shut up.

2210. Then, as regards the milk; the dairy receiving the milk at once stopped the supply. What became of the milk produced on the farm?—It was thrown away.

2211. It was not used?—It was not used.

2212. I suppose that was under your direction?—That was under my direction, yes.

2213. Were those directions that you gave in this case directions that simply occurred to you as suitable, or were they on the instruction of the Board?—No; they are what I considered suitable at the time, and then when I got home, I read up the Foot-and-Mouth Disease Order to see whether anything had been omitted.

2214. The Foot-and-Mouth Disease Order covers all that is necessary?—All that is necessary, yes.

2215. And I suppose every veterinary surgeon in the country has a copy and consults it when occasion arises?—All those who have public appointments. I do not know that every veterinary surgeon has. I should say not.

2216. You say every veterinary surgeon who is not a public servant may not possess a copy?—I do not think he would possess a copy unless he specially asked for it.

2217. But he might be called in and might be in the same position as you were on an outbreak?—As a private practitioner?

2218. Yes?—Yes.

2219. Then do you not think it would be better if there were some steps taken to ensure that everyone knew what should be done?—Yes, I think it would be a very good thing.

2220. (*Mr. Field, M.P.*) With regard to this outbreak, do you really think that a fowl, the importation

of these fowls, and the straw that might have been supposed to have been blown over the wall, of which we have no actual evidence, would be a reasonable solution of how the foot-and-mouth disease came?—Yes, I think so. I think that even if one blade of hay which had been infected had blown over into the yard that that might have started the disease there.

2221. You apparently agree with the opinion that this disease never arises from what may be called natural or predisposing causes in this country, that it must be imported direct?—Yes. It is a disease that never arises spontaneously, in my opinion.

2222. Never arises spontaneously?—Never arises spontaneously.

2223. And it has arisen spontaneously somewhere else?—I believe the virus has been conveyed from some country where it is prevalent.

2224. And brought over here?—And brought over here.

2225. Do you agree with what Mr. Smart said, that in particular cases which he mentioned, after 30 years and a certain length of time, another outbreak has occurred?—Yes.

2226. Would you think there were any predisposing causes in the nature of certain grasses or roots or herbs that might help to bring about this disease?—No.

2227. You think it is altogether of foreign extraction, like most diseases?—I think it is on a par with small-pox, scarlet fever, and those types of diseases. It never arises of itself, and it must be conveyed from some person or animal, either directly or indirectly, that has been suffering from it.

2228. It never can arise from any combination of causes in the individual or the animal which would cause that disease?—No, I do not think so.

2229. Now, only one question more. Are you of opinion that by concerted action between all the veterinary authorities in the different nations, we could do a great deal more to prevent this disease and other animal diseases?—Well, yes, it would be a benefit, no doubt, if there was concerted action.

2230. Are you satisfied that the Board of Agriculture has sufficient powers to deal with any of the outbreaks that come along?—Oh, yes, I think so. If the disease spread, I do not know whether the staff would be large enough without coming on to the local authority to help them.

2231. I was just coming to that. Has it been your experience that the local authority co-operates, in what I may call a live way, with the central authority here?—So far as Surrey is concerned.

2232. So far as Surrey is concerned; that is within the radius of your own office?—Yes. We have eight assistant veterinary inspectors in Surrey, and I know that they all co-operate with the Board.

2233. Just one question, with regard to what was said by some member of the Committee, I take it you represent the local authority?—That is so.

2234. Would you consider it a wise thing if the Board of Agriculture issued these notices with respect to the precautions that ought to be taken when an outbreak takes place to all the veterinary surgeons in the country who would be likely to come in contact with such an outbreak, although they are not connected with the local authorities?—Yes, I think it would be a good thing.

2235. (*Chairman.*) Do I understand you to say that this farm is the farm that some years ago there was an outbreak in?—So I was told by one of the old labourers on an adjoining farm, that when he was a boy he recollects that there was a very severe outbreak of foot-and-mouth disease on this particular farm.

2236. How many years ago was that?—That would be roughly somewhere about 40 years.

2237. On this very holding?—On this very farm.

2238. Then, you were asked by one of the members of the Committee, how you had learned all about foot-and-mouth disease, and you said it was when you were at the Royal Veterinary College you went down to Deptford?—Yes.

2239. And you learned there what foot-and-mouth disease was?—Yes.

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2240. Do you know if these kind of classes take place now?—No, they do not.

2241. Because there are no outbreaks?—No; and I do not think they would permit any strangers in the yards. You see, the yards would be under the control of the Board of Agriculture, I take it, and they certainly would not permit any strangers to go near infected cattle.

2242. And so, really, the young veterinary profession has no opportunities now of learning what these certain diseases are?—No opportunity of actually seeing them.

2243. I ought to have said that. I mean of seeing what these actual diseases are like?—Yes, that is so.

2244. And there is nothing more, any suggestions or any ideas, you can give from a practical point of view to the Committee about this disease, can you? Is there anything that you would like to bring out?—No, I do not think so, sir.

2245. You are perfectly satisfied in your own mind with the work of the local authority. As regards your own local authority and the Board of Agriculture everything has worked smoothly and well?—Yes.

2246. There is no friction of any kind?—We have assisted each other in every way.

2247. You are perfectly satisfied that everything has been done between the two bodies?—Yes.

2248. (Mr. Field, M.P.) May I ask whether you would not, as a member of the profession, welcome a suggestion from this Committee that a sum of money should be placed at the disposal of those interested, so as to have research work and scientific experiments carried out with a view to find out exactly, if possible, what is the term of life of this germ, and other cognate matters?—I think that is really the first thing that should be done.

2249. That is really the first thing that should be done?—That is really the first thing that should be done, to work out the history of the germs.

2250. And then you would have some concrete fact and knowledge to act upon?—We should have something to go upon.

2251. We are only going by conjecture now?—Yes, we are only theorising.

2252. We are like a political party in the future?—We are theorising now.

2253. (Mr. Richardson Carr.) You would not suggest it should be done in England, would you?—I do not see any particular objection in doing it, of course under certain conditions. No doubt we lost a very great opportunity in not being able to test this litter that I was talking about. It would have set the question at rest if we had the litter tried on an isolation farm. For instance, try its effect on sound animals.

2254. (Mr. Bathurst, M.P.) You would have liked to have fed that litter on sound animals on an isolation farm?—Yes.

2255. And being an ultra-microscopic germ, that is in fact the only way to discover what the source of an outbreak is?—That would be so.

2256. Is there not a danger, that being so, of England never being free from foot-and-mouth disease?—I do not think so; I think it could be localised to that particular farm the same as the outbreak at Brooklands, for instance, was localised.

2257. But do you think foreign countries would take our cattle when we were breeding foot-and-mouth disease?—Experimentally?

2258. (Mr. Nunneley.) I do not think they would; I do not think you would find anybody would take your cattle. You say there had been an outbreak 40 years ago on a farm. How many farms in Surrey could you find that had not had an outbreak in 40 years?—Not very many I should say.

2259. That has nothing to do with it?—That has nothing to do with it.

2260. (Mr. Bathurst, M.P.) You are familiar with the notice relating to the symptoms of foot-and-mouth disease received from the Board of Agriculture?—Yes.

2261. Now would you, as the inspector of a local authority, resent in any way the receipt of such a notice as that?—Personally I should not.

2262. Do you think your colleagues generally in a similar position would object to be told or reminded of the symptoms of foot-and-mouth disease?—I do not think they ought to. I do not know whether they would or not. I do not think they would. A moderately broad-minded man would not.

2263. Under these circumstances, bearing in mind that the younger men are not very familiar with this disease, do you not think that is a good way of familiarising them with the symptoms?—Yes; of course it would draw their attention and refresh their memory in regard to the symptoms.

2264. Just one other thing, have you ever suspected in this or any other case artificial fertilisers being the source of the carriage of the disease?—This is the only particular outbreak I have had any connection with.

2265. Do you happen to know whether there was any artificial manure on the premises?—I do not think so; not on these particular premises.

2266. I have in my mind particularly guano. Guano is used not only in a good many compound manures in farm use but it is used in all compound manures for garden use, and I think I am right in saying that guano comes from the resorts of sea birds?—Yes.

2267. Is it not a possible source in your opinion of the disease when such guano is used upon other farm or garden premises and an outbreak subsequently occurs?—I cannot see any connection between the two.

2268. Bearing in mind as has already been suggested, the disease might be carried from other countries or might be carried on the feet or even possibly the wings, the feathers of seagulls, and guano comes very largely from seagulls in its origin, can it not be conceivably a source of the disease?—I think it is very remote.

(Chairman.) Thank you, Mr. Wild; many thanks; you have given us some very good evidence.

The Witness withdrew.

Thursday, 22nd February 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (Chairman), presiding.

Sir CHARLES D. ROSE, Bart., M.P.
Sir HARRY VERNEY, Bart., M.P.
Sir J. BOWEN BOWEN-JONES, Bart.
Mr. CHARLES BATHURST, M.P.
Mr. WILLIAM FIELD, M.P.

Mr. JOHN HINDS, M.P.
Mr. GEORGE R. LANE-FOX, M.P.
Major E. MARTEN DUNNE.
Mr. E. E. MORRISON.
Mr. E. M. NUNNELEY.

Mr. W. H. F. LANDON (Secretary).

Mr. C. E. TANEARD, Surveyor, Board of Customs and Excise, called in and examined.

2269. (Chairman.) You have come to-day to give evidence to us on behalf of the Customs?—Yes, sir.

2270. You are a Surveyor of the Board of Customs, are you not?—Yes, sir.

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[Continued.]

2271. And I see by your notes that you are prepared to give us some evidence as regards the various imports packed with hay or straw; the classes of goods that are imported, and the countries from which they are imported. Now, will you begin and tell us about the imports first of all?—I speak now, sir, particularly with regard to the imports packed with hay or straw.

2272. Are you going to speak on behalf of all the ports?—Yes, generally. I have had a varied experience in the importation of foreign goods, and I can speak generally as a practical officer. We have imports packed with hay or straw consisting of empty bottles from France and Belgium; earthenware from Belgium and Holland; glassware from Belgium and Germany; hardware from Holland and France; chemicals from Germany; plate-glass from Belgium; slate slabs from Portugal; marble from Italy; bananas from Canary Islands; toys from France and Germany; eggs from France, Germany, Russia, Denmark, and Egypt; bronze ornaments from Belgium and France, machinery parts from Belgium and Holland.

2273. Those are packed, as a rule, with hay or straw?—With hay or straw.

2274. Is it a fact, or is it not, that during the last few years there has been less articles packed with hay or straw than there were a few years ago?—I think there are fewer articles packed in that way now.

2275. You, I suppose, examine all these things at the port of landing?—A percentage of them.

2276. A percentage of them?—We see each description of goods.

2277. And they come, I suppose, in crates?—Crates, barrels, and cases, but mostly in crates. The rough stuff is generally imported in crates, the finer and more expensive articles are generally imported in cases.

2278. I understand you to say that you open specimen-cases, do you not?—Yes, sir, a certain percentage.

2279. It would be perfectly impossible for the Customs to open every case, would it?—It would be quite impossible.

2280. Quite impossible?—Yes.

2281. Do you find that any of these articles have been packed recently with wood-wool?—Yes, sir.

2282. Wood-wool is rather taking the place of hay and straw, is it?—I believe it is; especially with the superior kind of goods.

2283. And especially to the port of Harwich, is that not so?—Yes, we likewise get it in goods imported from Holland, which is rather remarkable seeing that Holland is not a timber-producing country. There are special manufactories, I believe, for the manufacture of this wood-wool.

2284. Well then, what about imported food-stuffs?—I am prepared to give evidence, sir, with regard to imported food-stuffs, either for animal or human consumption.

2285. Well, for animal?—As food-stuffs for animals, we have maize from America, the Argentine, West Africa, and Canada; molasses from America and Egypt; linseed-cake in large quantities from Russia, Belgium, and the United States of America; cotton-seed cake from America and Egypt; rice meal from China; soya beans and cakes from India; rape-cake from Russia.

2286. Oats?—Yes, oats. I have not specified the various kinds of corn used for animal food. There are exhaustive returns here, I see, showing the countries from which these goods are imported and likewise the ports into which imported. Oats are imported in bags, and in bulk, and linseed-cake, and cotton-seed cake I have seen imported in bulk.

2287. In bulk?—Not packaged at all.

2288. Now, Russian oats and maize generally come in in bulk, I take it?—Yes, that is so, and they are packed on the quayside into bags.

2289. Packed on the quayside into bags?—Frequently for carriage inland.

2290. Well then, about imported hides, and heads and feet of animals with wool attached?—We got a return, sir, after we heard of your requirements, and we find that salted hides are imported at nearly every station in London. Of course, hides are imported at other ports; at large ports particularly, in the Kingdom.

Salted hides are imported from France, Portugal, Belgium, Germany, Australia, New Zealand, Cape Colony. Fresh hides, nil.

2291. You say there are no fresh hides?—No fresh hides, sir. The hides that are imported are salted hides.

2292. Yes, well?—Heads and feet of animals with wool or hair attached are imported occasionally into London in packages described as offal. These have the Governmental label attached although they are liable to inspection by the Medical Officer of Health. There are few importations of this nature.

2293. (*Mr. Field, M.P.*) Where do they come from?—These come from the Netherlands; that is about the only place. We have no importation in London of calves in skins.

2294. (*Chairman.*) Do I understand these sheep's heads are labelled with a Government certificate from abroad?—Yes, sir, from the Board of Agriculture abroad. Of course, they are liable to inspection.

2295. But they get a certificate from the Board of Agriculture of the country where they come from?—Yes, and the label is attached to the package which contains these goods. We have regulations describing the forms of these labels with the exact wording contained thereon, so we know whether the thing is *bona fide* or not.

2296. Now, as regards hides, is there any disinfection at all at the port of embarkation?—I do not think so beyond the fact that they are salted, and that acts as a kind of preservative.

2297. Exactly, none of these things are absolutely disinfected at the port of embarkation?—No, sir, I do not think so. We have hides, of course, which have been partly cured, the dry hides coming from abroad.

2298. Hides are reduced in numbers, are they not?—Yes, I think so. Salted hides we have in large quantities. I do not think there are so many dry hides. The hides which come from South America are mostly dry, and have, I think, been sun-cured.

2299. One more word about that hay and straw. I gather from you that, owing to the enormous amount of articles which are packed in hay and straw which come to our different ports, it would be quite impossible for the Customs to examine them all; even if possible, it would be impracticable. The goods I have enumerated here are those which I can speak to from experience as being packed with hay and straw. Of course, these are only a small proportion in comparison with the quantity of manufactured articles and other imports that take place.

2300. What are the other goods packed in?—Wood-wool, paper, and sawdust. There may be others; the list may not be complete.

2301. So far as you can remember?—So far as I can remember. The list I quoted only had reference to goods packed with hay or straw.

2302. Packed in hay and straw?—Packed in hay and straw.

2303. (*Sir Bowen Bowen-Jones.*) In your opinion, would it be an unreasonable restriction to impose upon foreign goods imported that they should be packed in wood-wool instead of in straw?—Well, I think that is quite possible. I would not like to commit myself to the enforcement of this.

2304. That is the next question; could you enforce it if such a restriction were imposed?—I am rather afraid I am not in a position to answer that question. In the event of any contemplated change in the law as to the restriction of imported goods it is likely, of course, that some information would have to be obtained from the Commissioners of Customs and Excise.

2305. Well, then, take another view of it. Supposing no such restriction were imposed. Supposing these articles were still imported, packed in straw, could a regulation be enforced for the destruction of that straw before it leaves the premises of the importers?—I do not think so.

2306. Then, with regard to ordinary food produce, maize and cakes, can you suggest any means of preventing contagion being carried in them to this country with the germ of foot-and-mouth disease upon it?—I could not.

2307. With reference to the hides, do you think the salting altogether destroys the germ or the bacillus of the foot-and-mouth disease?—Well, while not altogether

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[Continued.]

destroying, I think it keeps down insect life to such an extent that I do not think there is any fear of any disease being introduced into the country on account of the importation of these hides. These imported into London are, I think, immediately sent across to Bermondsey.

2308. To the tanneries?—Yes; they come over here for the express purpose of being converted into leather in the tanneries.

2309. If they leave England before being sent inland they leave without coming into contact with any animals in England?—Yes, generally speaking, I should say so.

2310. What exceptions do you think might occur?—Well, the horse and van that are utilised for conveying these. Foot-and-mouth disease, I understand, does not generally affect horses, but there is a possibility of these coming in contact with other animals during the transmission of these hides.

2311. Then with regard to dry hides, is it not possible that germs of disease might be dropped on to them from other articles imported?—Yes, I should say so. With regard to dry hides, we find a good deal more insect life on them than on wet hides.

2312. Where do these go when they are unloaded from the ships?—In my opinion, they are taken to the tanneries.

2313. But the dry hide would be cured, would it not?—It is not made into leather; it is cured inasmuch as sun-drying can cure it, but it generally undergoes another process before it becomes leather. It is still a hide, it is not leather.

2314. It would not go direct to the bootmakers and saddlers?—No.

2315. If it goes direct to the tanneries there is no more danger from the importation of dry hides, in your opinion, than of salted hides?—With regard to dry hides, I had an importation just recently. I traced the origin of these dry hides. These were buffalo-hides from South America, imported first of all into Antwerp and afterwards brought from Antwerp to London, and the destination may or may not be London; but in this case these hides, of course, had been travelling the country for many thousands of miles and may be the means of transmitting disease.

2316. Can you suggest any means of disinfection or other method to prevent any possibility of the disease on this side from that source?—I could not, sir.

2317. Then with reference to calves with their heads. You say they come in with a certificate of soundness, freedom from disease, from the other side?—That is so.

2318. Is that certificate in your opinion of any value?—Yes, I think so.

2319. Have you ever heard of an outbreak owing to a certified article of that sort being brought in?—Not resulting in an outbreak of anything, but I have known goods which have contained this label to be condemned subsequently by the medical officer of health.

2320. That seems to diminish the value of such a certificate?—To a certain extent. Recently, for instance, with regard to Australian beef. We had a certain quantity of beef which was duly labelled, and was found to be unsound; it was condemned by the medical officer of health. The case, I may say, is quite exceptional.

2321. That is unfit for human food you mean?—Unfit for human food.

2322. And not necessarily diseased with foot-and-mouth disease?—It was contagious; it contained worms, and it had passed a veterinary inspector at the port of embarkation; yet it was condemned in this country by the medical officer of health.

2323. (*Mr. Lane-Fox, M.P.*) You say that maize and oats and other grain arrive largely in bulk and is packed in bags on the quayside?—Yes, that is so.

2324. Is that the same place where these hides and calves in their skins, and other things, were all shot; I mean is there a chance of their being landed at the same quay?—There is.

2325. Therefore it is possible that that grain may become contaminated by germs of disease contained in the hides or the calves in their skins?—Yes, it is quite possible.

2326. Would it be possible to separate the various articles?—Yes, it would.

2327. That would be a possible means of preventing contamination?—Yes, that is done practically by the shippers. Though the goods are landed on one common quay, they are placed apart so as not to come directly in contact with each other for convenience.

2328. But there is no guarantee when one set of grain is cleared away that there may not be hides shot exactly in the same place?—No guarantee whatever.

2329. And it is your opinion that there is no effectual inspection of these hides at the foreign ports of embarkation?—Not to my knowledge.

2330. You were alluding to foreign ports, not to our ports; you were alluding to the port from which they came when you said that in your opinion there was no disinfection at the port of embarkation?—No, I was alluding to the port of importation.

2331. (*Chairman.*) I said 'exportation'?—I beg your pardon, I was alluding to importation. Of course, I do not know what they do at ports of exportation in that respect.

2332. Yes, but my point is, have you any knowledge of articles that we have been talking about, hides and sheep's heads, being disinfected at the port of embarkation?—I have no knowledge. With hides we get no certificate, but with regard to these calves' heads, we get a certificate from foreign countries. We import these from Holland, and they contain a label approved by a veterinary inspector.

2333. (*Mr. Lane-Fox, M.P.*) Yes, but what does that label say? That the calves themselves have not disease?—That is so; free from disease and are fit for food.

2334. It does not say that they have not been in contact with others that have had disease?—That is understood if they are fit for human food. Of course, these goods come from scheduled countries, that is to say, from countries from which cattle as such are not allowed to be imported. But these are food-stuffs; if the packages which contained these have on this particular label, so described according to agreement, then we pass these goods. As I said, they are liable to inspection by the medical officer of health.

2335. But in the case of a country which is full of this disease, a certificate of that sort cannot be of very much value as regards contact?—That may be so.

2336. You said the Customs could not possibly examine every package that comes over. That would practically make it impossible for you to insist that no package should be packed in hay and straw?—Yes, that is so.

2337. If the Committee were to make a suggestion, it would be impossible to carry it out?—It would be impossible to carry it out; the trade would very much resent that, I think.

2338. (*Sir Harry Verney, M.P.*) Just one question about the oats, which you say are packed on the quayside in bags. What about the bags; do they come over with oats very often?—When the goods are imported in bulk the bags are provided in this country.

2339. You do not know where the bags come from; they may be from London?—Yes, that is so.

2340. One other question, which I am afraid is from ignorance. You say with regard to the heads and feet of animals that a few come over. What do you mean by "a few"; what sort of value; have you any idea? I mean, if one is going to prevent them coming over would the hardship be very great; I will put it that way?—I do not think it affects any country except Holland.

2341. When you say "a few," can you give any idea as to quantity?—No, I cannot give you any idea as to quantity. This information may have been provided by the Statistical Department. There are exhaustive returns here; perhaps this may have been mentioned in one of these returns.

2342. You probably have got some idea in your head; I have none when you say "a few." Did that mean they come over a few every day or once a month?—They may come over every day.

2343. A few may come over every day?—A few

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may come over every day, but I do not think it is a serious quantity, taken in the total.

2344. The value in the year would amount to some hundreds or thousands?—Yes, it would amount to thousands; I do not think it would be a very serious item.

2345. To whom do they go; by whom are they used? Would it be a hardship upon them if the importation were forbidden?—I cannot say, but I suppose they go to the various restaurants in the city to be used as food in some shape or form.

2346. That is rather what I was driving at; whether they really are food, very cheap food, for the poorer people?—Yes, I think so; that is my opinion.

2347. So that it might be a very great hardship to forbid that importation?—Yes, in a way.

2348. (Mr. Bathurst, M.P.) How are these eggs packed as a rule?—In crates about five or six feet long, packed with hay or straw, but often with wood-wool; not invariably with straw.

2349. Are the majority packed in hay and straw?—In hay and straw, I think.

2350. Those that come from Russia for instance?—They are packed with hay and straw.

2351. Are these eggs, particularly from Russia, clean eggs?—No.

2352. Have they ever dung on the surface of them?—Yes.

2353. Does that apply to any particular country?—I think that is general; they are uncleaned.

2354. Are there any countries from which they are imported which do send them clean?—Not to my knowledge.

2355. In Holland for instance, or Denmark?—I think perhaps they may be a little cleaner from there than is the case with some of the other countries, but it is not an invariable practice to clean them.

2356. This wood-wool; do you consider that wood-wool would be available for packing in most of these exporting countries?—I am of that opinion.

2357. You mentioned soya-cake, which I believe comes from India?—Yes.

2358. As being imported now. There has been a considerable increase in the importation of this during the last few years, has there not?—Yes, I believe so.

2359. (Mr. Lane-Fox, M.P.) Some from Manchuria?—Yes.

2360. (Mr. Bathurst, M.P.) You mentioned India?—These returns, provided by our statistical department, might give the countries from which the soya-cake is imported, and the ports into which it is imported.

2361. I would rather like to know where soya-cake does come from. You mentioned India, but perhaps that is a mistake?—Yes, that is a mistake; it should be China. Will you excuse me one moment; perhaps I may find it in the returns.

(Chairman.) Yes, please do.

2362. (Mr. Bathurst, M.P.) If there is any difficulty in looking it up I will not trouble you now; perhaps you could give me the information afterwards?—I do not happen to see it.

2363. Do not trouble about it now. However, during the last two or three years the importation of soya-cake has largely increased, has it not?—I think it has.

2364. How is that packed; would that come loose like the linseed-cake, and the cottonseed-cake?—I think the soya-beans would be imported in bulk, and the soya-cake would be imported in bags, so far as my recollection serves.

2365. Is the bulk of the soya imported in the form of a bean to be converted into cake in this country?—I think that is so.

2366. I was not aware of that.—That, I think, is the case.

2367. With regard to the label or certificate to which you have referred, is the form of that certificate settled by our authorities?—In conjunction with the foreign country, by agreement.

2368. By agreement?—Yes, that is so.

2369. Is the same form insisted upon in the case of all importing countries?—No, sir, not exactly the same form, but it is the same in purport. We have different

labels for different countries; they are the same in purport, but not expressed in exactly the same words.

2370. Do you think there would be any hardship in carrying out Mr. Lane-Fox's proposal that this label should include a certificate that these calves in their skins had not been in contact with diseased animals?—I think that could be done; I think that is implied.

2371. There would be no great hardship in that?—No, I do not think so.

2372. It is merely implied now; it is not specifically stated in the certificate?—No.

2373. This hay and straw in which articles are so largely packed, is its condition in your opinion such, or the condition of most of it, such, as to render it fit to be fed to animals?—It varies to a very great extent. Some of it is very offensive; other hay or straw may be in very good condition. Hay, I may say, is used repeatedly. It may be used for packing in this country, and likewise the same hay used for packing in a foreign country. I have known some of the hay to be utilised for about three years for this specific purpose—packing going to and fro. It becomes very offensive then in time, naturally.

2374. But a good deal of it, I take it, is sufficiently inoffensive to make it possible to feed it to animals?—Yes, that is so.

2375. Have you any knowledge yourself as to the destination of this hay or straw; I mean do you happen to know whether it is used to any large extent either for litter or for animal-food?—No, I do not think it is.

2376. You do not think so?—I have no knowledge as to that.

2377. (Chairman.) You would not be likely to have any knowledge as to that.—No, I would not, sir.

2378. The Customs would not, I should think?—No.

2379. (Mr. Bathurst, M.P.) I suppose you have some knowledge as to the condition of the holds of the vessels in which these goods are carried?—I have.

2380. Where, exactly, on a ship is the cake and the grain stored?—In the holds.

2381. How are those holds cleansed?—By sweeping.

2382. Are they washed?—I do not think so.

2383. You do not think so?—No.

2384. But are you speaking now of the process they undergo at our ports, or the process they undergo at the exporting ports?—I do not know the process they undergo at the exporting ports, but I have never seen them washing the holds in this country. The only cleaning they seem to get is by simply sweeping up the refuse in the hold after the cargo has been discharged.

2385. We have no regulations in force at our ports which would necessitate the washing or disinfecting of the holds?—Not in that case.

2386. Are these holds that are used for storing cake and grain also used for the carriage of hides and skins and calves in skins?—They may be used promiscuously.

2387. They may be used promiscuously?—But when grain is imported, of course, you must have a certain hold reserved. A portion of the hold may be made up of certain bulk-heads in order to keep the grain in a specified place. That grain can only occupy a particular part of the hold. It is not like being in a package which can be associated with other goods; it must be kept necessarily apart unless it is in bags.

2388. But is there any reason why the same hold may not contain a cargo of grain, or what should I say, not contain a cargo of hides or skins, and subsequently contain a cargo of cake or grain without any cleaning, other than brushing, between the two cargoes?—That is possible.

2389. That is possible?—Yes.

2390. Does not that occur to you as a possible source of the carriage of infection?—It is a possible source.

2391. Just one word with regard to dry hides. You say that these are not carried direct to this country but are carried through Antwerp?—Antwerp is the emporium for goods coming from South America, and South American hides of that description are frequently brought *via* Antwerp.

2392. I suppose you are aware that Belgium is a

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country in which foot-and-mouth disease has at various times been rife?—Yes, so I understand.

2393. Is it possible that these hides could be brought into contact at the port of Antwerp with animals or skins affected with foot-and-mouth disease?—It is possible.

2394. But you are not aware that precautions are taken to prevent such a process taking place?—I cannot speak as to that.

2395. Have you any knowledge of what happens at the ports of embarkation with regard to the separation of cattle on the one hand and grain and cake on the other?—Has your question reference to any goods imported into this country?

2396. Yes; I have particularly in my mind Russian ports?—Russia is a prohibited port with regard to cattle.

2397. I know it is; but my point is this. It is a prohibited port as regards cattle imported into this country?—Yes.

2398. But there is nothing, I imagine, to prevent cattle being shipped from a Russian port to other countries?—And then in continuation of the voyage?—

2399. Well, that is another point; but what I was going to suggest is that there would be a possibility if cattle were shipped from a Russian quay to other countries, and from the same quay grain and cake are shipped to this country, there might be a danger of infection at the quay?—There is a possibility as to this danger.

2400. Then you were going to say with regard to a continuous voyage, could it possibly happen that cattle might be put on board ship at a Russian port for consignment to some other country, and upon the same ship there may be Russian grain or cake stored for consignment to this country?—Yes, that is so.

2401. And there would be the possible danger in that case of the grain or feeding-stuffs becoming infected in that way?—Yes, that is quite possible.

2402. (*Major Dunne.*) Only just one or two questions. With regard to this certificate, I take it that a certificate really is more insisted upon when it is a question of the imported articles being imported for human consumption. That was the object of the certificate, was it not?—That was the object.

2403. Could you tell us exactly what the wording of that certificate is?—I could not give you the exact words, but I can give you the purport. There are two conditions: one is that it is fit for human food, the other that it has passed a veterinary inspector connected with the Board of Agriculture at the port of embarkation. I could procure you copies of these labels from the various countries. We have by agreement labels with the Netherlands, Queensland, Canada, Belgium—I think there are about six countries concerned; unfortunately I have not got a copy of the label with me just now, but I can obtain and send copies of these labels, which are shown in our regulations. You will see the exact wording thereon.

2404. I suppose that label is not attached, for instance, to dry hides?—No, sir.

2405. Therefore, we have got no guarantee, of course, that these dry hides which may come from these various countries may not be the hides of animals which may themselves have had the disease, or been in contact with animals that have had the disease?—No labels are attached to dry hides. These labels are used for attachment to food-stuffs.

2406. To food-stuffs entirely; that is the object of the label?—Yes.

2407. To safeguard the food-stuffs and not to safeguard things which are imported for manufacturing purposes?—Food-stuffs for human beings.

2408. As regards these heads and feet, is there a label attached to each one individually, or is there one label covering the bulk?—One label covering the bulk.

2409. So that it would be quite easy, for instance, for anybody, if they wished to be dishonest in the matter, to include a certain number of heads and feet that they might be doubtful about, hoping that they might be passed, because they would be in bulk, and therefore there would not be very much chance of detecting them?—When I spoke about these being imported in bulk,

I meant imported in bulk only to a limited extent; that is to say, so many are contained in one crate.

2410. In one crate? Then each crate has a ticket?—Each crate bears a label.

2411. Then as to these crates; is there any further covering, or are they exposed; is it just a wooden crate?—A wooden crate.

2412. And the heads and the feet are to that extent, of course, exposed to contact with other things?—That is so.

2413. (*Mr. Nunneley.*) Just one thing. You know that the importation of hay and straw from certain countries for fodder is prohibited?—Yes.

2414. You do not think it is practical also to prohibit it for packing purposes, or rather to carry out the prohibition from the same countries?—I am not prepared to give an answer to that.

2415. In your evidence you say that not all packages are opened, only a certain proportion?—Only a certain proportion are opened; but with regard to packages packed with hay or straw we can see this projecting from the ends of the packages; we can tell at once the nature of this packing by outside observation, without having the packages opened.

2416. But you are not prepared to say whether it could be prohibited; the use of hay or straw from infected countries could be prohibited?—I think that is a matter which I should prefer to be submitted to the Board of Customs and Excise.

2417. (*Mr. Hinds, M.P.*) Is that packing by wood-wool on the increase in your experience?—I think it is, sir.

2418. To a great extent?—It is not used to a very great extent except with regard to the more expensive articles, but I think it is necessarily on the increase.

2419. You said something with regard to Belgium not being a wood-producing country?—With regard to Belgium not being a timber-producing country? I have knowledge that wood-wool is often used for packing goods which we receive from Holland.

2420. Did I understand from your observation that there was no disinfecting of the holds where those imported hides came in?—So far as the Customs and Excise Department is concerned we pay no attention to that. I do not think there is any disinfection at all. The shipper in his own interest may do this, but I do not think this is compulsory from the sanitary authorities' point of view. With regard to the importation of cattle, of course, the Board of Agriculture insist upon the vessel being duly cleansed and disinfected, but with regard to the importation of manufactured goods, we do not insist upon it being done.

2421. Then do you export a good number of these hides that come here to other countries?—Yes, they are likewise exported as well as imported.

2422. Do other countries insist on our label? Is there a difference in the label that other countries insist upon; that guarantee label that you speak of?—This guarantee label only applies to goods which are exported from other countries into this country.

2423. I mean with regard to our exporting. Do they to the same extent demand a label of this character?—I cannot say as to that.

2424. (*Mr. Morrison.*) Wood-wool is coming more into use you say; is it a superior packing to hay and straw?—I think it is rather cleaner, and it is quite equal in its effect.

2425. You think it is being preferred nowadays to hay and straw?—I would not go so far as to say it is now being preferred, but I think it is on the increase.

2426. Are you aware whether it is more expensive or less expensive than hay or straw to the packer?—Well, I cannot speak from actual knowledge about that, but I should say it is a little more expensive.

2427. In these crates I suppose that the hay or straw or the wood-wool is quite exposed and could come in contact with anything in transit?—Yes, that is the fact.

2428. So that the infection could be carried not only in the bale itself but on the outside by getting it from, say, railway wagons before coming here?—Yes, that is possible.

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2429. So that wood-wool then might carry the infection?—That is quite possible.

2430. As regards the calves in their skins, do you know what ports introduce these calves into Britain?—With regard to calves in their skins, I think we had a *nil* Return for that, sir. We had no importations, it was found, in London.

2431. In London?—Yes.

2432. The other ports did introduce them?—There may be some into the other ports. Harwich is the port at which a lot of importations arrive from Holland, and as to that I have no knowledge.

2433. I suppose it is known that a good many calves do come in in that way at Harwich and Leith and so on?—Yes. These would likewise bear this official label, and would be liable to inspection by the medical officer of health.

2434. Are you aware if each calf is inspected individually by the veterinary surgeon at the port of landing?—If it had the label attached it would not necessarily be detained and might not be inspected at all.

2435. If a label was attached to a consignment it may not be inspected at all at the port of disembarkation?—That is so, on account of bearing that certificate.

2436. Then the veterinary surgeon: Is his duty to your mind mainly to inspect something that has no label?—That is so, that is his primary object.

2437. Then are there many such consignments without a label; consignments of calves in their skins, or heads, or rather of food-stuffs?—Yes, there are food-stuffs, not with reference to the hides.

2438. Do calves in their skins ever come without such a label?—It is quite possible. It is only with reference to countries where an agreement has taken place that these goods contain these labels—specified countries.

2439. So that there might be a country which is known to be infected with foot-and-mouth disease, and that country might send calves to this country without having a label?—Yes.

2440. That is to say they were not inspected at the port of embarkation?—But they would be inspected here. If they did not contain the label the goods would be detained and necessarily inspected by the medical officer of health.

2441. By the medical officer of health; but is not there a veterinary inspector as well on duty?—No.

2442. So that supposing calves were to come in I suppose there is nothing to prevent this happening, calves coming from a farm in a country where disease is rampant and these calves reaching our shores without being inspected either before shipping or inspected after shipping or after being landed?—Yes.

2443. It is quite possible. Does not that strike you as rather a serious matter?—Yes. These would be inspected by the medical officer of health at the port of landing.

2444. But not by a veterinary inspector?—Not by a veterinary inspector.

2445. Then does the medical officer of health look for signs of disease, such as foot-and-mouth disease, in the calf, do you know? Is his object simply to certify that it is fit for food?—That is the object.

2446. Then do you think it would be a practical idea to insist upon holds being disinfected after they had such consignments as hides or calves in their skins. I mean to say on our shores; would that be practicable?—I should imagine it would be practicable.

2447. Would it be a hardship do you think on the shipping people; would it be expensive?—I think so.

2448. It is hardly in your department. Then I suppose a ship might carry grain one voyage and in the same compartment of the ship there might be hides the next and *vice versa*?—That is so.

2449. And so far as you are aware there is no disinfection of ships?—So far as I am aware.

2450. (Mr. Field, M.P.) I think you stated that the wood-wool was coming more into use. Have you any idea as to the relative expense of wood-wool and hay and straw, the relative cost of it; first cost of it?—I have no idea as to the relative cost between one and the other.

2451. Does it strike you as being rather a peculiar anomaly that we forbid the importation of hay and straw as a medium for carrying infection and that we allow hay and straw freely to come in as a means of packing?—Yes, it does look rather anomalous.

2452. Have you any suggestion to make on that point; would it involve a great deal of hardship on the importers to use some other substance instead of hay and straw, which is forbidden as an article of forage but is allowed as a means of preserving the imports? I do not know that I should ask you that question; that is a question for legislation?—I hardly think I am in a position to answer that.

2453. There is a great deal of rape and linseed cake comes from Russia?—Yes, that is so.

2454. Is there more comes from Russia relatively than from any other country?—Yes, I think so.

2455. The same thing applies to oats?—I should say so.

2456. We get more oats from Russia than we do from any other country?—Yes, I should say so.

2457. Now, with regard to hides that are salted, they must be sufficiently salted to keep them good for a certain time; during the voyage?—Yes.

2458. You get very little dry hides. The dry hides come from South America generally, and South America is very full of foot-and-mouth disease and various diseases. I do not know whether you are aware of that fact, that it is generally supposed by veterinary surgeons that the salt takes out the spores and also the bacilli of the foot-and-mouth disease. Have you ever been to Antwerp?—Yes, I have been there.

2459. Well, I have been there myself. As a matter of fact, have you visited the quays in Antwerp; have you been there?—Yes, I have been there.

2460. The dry hides would not come into contact with very much in Belgium; they are generally transhipped from one vessel to another; is not that so?—Yes.

2461. So that there could not be much danger of contact with disease that exists in Belgium or Antwerp, but it could come from the hides themselves; is that your opinion?—That may be so.

2462. Now, with regard to the separation of goods. As a matter of fact, the goods are generally separated on the quays according to their quality or whatever they are. I happen to be a member of the Port and Docks Board in Dublin myself, and I know one special class of goods are put together and another special class of goods; they are scarcely ever mixed; is not that so?—Well, they are put down rather promiscuously at times; it is rather a question of convenience.

2463. When they are coming out of the vessel they must be mixed naturally; but, as a rule, mixing on the quays outside is not so much a matter of usual occurrence?—It is purely a question of space.

2464. And convenience?—And convenience. While one wharfinger may keep all the goods separate, another wharfinger may mix up the goods in a very different manner.

2465. If they have not sufficient room?—It is simply a question of method and quay space.

2466. And whether they have a large consignment of different articles, is not that it?—Yes, that is so.

2467. And the shelter sheds and all that kind of thing?—Yes.

2468. With regard to the calves, I understand there are no calves coming to London at all now; calves in their skins?—That is so.

2469. And have not come for some time?—Well, not recently.

2470. These calves are supposed to be inspected at the port of embarkation?—Not necessarily.

2471. When they come to this side, is it a medical officer of health, that is to say, a doctor, that inspects them, or his deputy, and not a veterinary surgeon?—That is so; a medical officer of health.

2472. In these cases would you be of opinion that a veterinary official would be more efficient than a medical officer of health or his deputy? He would know more about foot-and-mouth disease, anyway, than an ordinary doctor?—Yes, that may be; but the medical officer of

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health who inspects this food is qualified in that particular respect.

2473. Is he?—Yes.

2474. To give a certificate with regard to animal diseases? He has gone through a course of bacteriological study, has he, as regards animals?—Perhaps not as regards disease of animals, but he is sufficiently qualified, I take it, to be able to say whether this food is fit for human consumption.

2475. I am not disputing that at all. However, that is hardly within your function, I think. Now, with regard to this inspection of holds, I think the members of the Committee look on that as rather an important point. From your experience do you think that disinfecting the holds of vessels which have carried any kind of goods calculated to be what may be called of an infective character would cause a great deal of expense to these shipowners and inconvenience; could it be carried out practically?—It could; but would cause expense.

2476. And delay and demurrage, I suppose?—That is so.

2477. So there would be considerable difficulty in adopting it?—I think the shipowners would rather resent it.

2478. I want to know now what countries have not adopted these labels about the food-stuffs, or is there a regulation making it mandatory on the countries that import food-stuffs to use these labels?—It is not compulsory, sir, but by agreement certain countries do use these labels which bear this Governmental guarantee, and I can give you a list of the countries, I think, which have come to this agreement. There is Holland, Belgium, Australia, New Zealand—

2479. Canada, I think you said?—And Canada and Denmark; I think there are about six.

2480. Does America do it?—No, sir, not by agreement. We do get certificates from America, however.

2481. Russia?—I do not think so.

2482. Well, as a Customs official do you think that arrangement could be carried out with all countries that import food-stuffs. Why should it be enforced in one country and not in another? Of course the difficulty comes that it is an amicable arrangement and you cannot enforce it?—An International arrangement; I cannot say anything as to that.

2483. Have you any suggestion to make now yourself to this Committee as a result of your evidence and the examination by the Chairman and the other members in connection with the safeguarding of infectious materials calculated to carry foot-and-mouth disease into this country, from your experience as a Customs official?—As a personal opinion, I would think that the substitution of wood-wool for hay and straw might be a preventive of disease.

2484. Well, I agree with you, that is one of the points precisely I wanted to get at. And then with regard to the disinfection of holds where goods of a character calculated to be a medium of infection have been carried, would it be an advisable thing to carry out?—There is no doubt that would be a step in the right direction if it could be insisted on.

2485. Then, with regard to hides, would you agree that it would be a good thing if these hides were disinfected at the port of embarkation on the other side. It would not be very troublesome. Of course we have no power; I quite agree we have no mandatory power, but we can make certain suggestions, and even if they are not carried out they would be good to lead us in that direction?—I am quite unable to make a suggestion in that way.

2486. There is only one other question I want to ask; some of the members seem to be rather dubious about these trotters; we call them trotters; these feet and skins. As a matter of fact they go straight up to the place in Ireland, they are scalded there, and they are used principally for the poor people; they do not come into contact very much with anything?—I believe not.

2487. They are very useful as food for the poor people; in fact it is a food for the poor people?—That is so.

2488. You would not advise any restriction being

put upon the importation of these articles?—Beyond what we now possess?

2489. (Chairman.) You need not answer this question unless you like; it is only a question for yourself: Supposing this Committee recommended that hay and straw for packing was to be prohibited in the future, would the Customs, in your opinion, be able to carry out that Order?—I almost think, sir, it would be judicious on my part not to give an answer.

(Mr. Field, M.P.) May I just say, Mr. Chairman, should not that Order come first from the Board of Agriculture and then go to the Customs to carry it out?

2490. (Chairman.) That is what I want to get at. I quite see your point of view, Mr. Tankard?—You see my point of view?

2490A. For the Head of the Customs it is an important point.

(Mr. Field, M.P.) It is.

2491. (Chairman.) I want to find out, supposing we as a Committee were to advise the prohibition of hay and straw used for packing, and if that Order were made, could the Customs carry it out, or could they not; but I must get that from one of your other officials?—I think so, sir; I think it would be better to get an opinion from the Board of Customs and Excise.

2492. Then there is another thing with regard to what Mr. Field and one or two others have said about the disinfection of holds. We have had evidence here that the disinfection of these holds would be very expensive and would create delay?—Yes.

2493. And I rather gather that you are of that same opinion?—That is my opinion.

2494. Would it create great delay, do you think?—Yes, I think it would.

2495. It would?—Yes.

2496. Well then, there is another question, you need not answer unless you like; would it be possible, do you think, to disinfect the hides at the port of embarkation?—Yes, I should imagine it would be possible.

2497. It would be possible?—Yes.

2498. Then, you were talking about these labels; I think if you would let the Committee have one of these labels to look at it would be a good thing; you will let us have one?—Yes, I have taken a note of that.

2499. And I understand you to say that from Germany, France, Belgium, and Russia there are no Government labels?—That is so.

2500. (Mr. Nunneley.) You said there were labels from Belgium?—I think with Belgium there is some agreement, and we have a properly approved Governmental label from that country.

2501. But none from the United States, I think?—The United States do put labels on, although I do not know whether it is by International agreement. For instance, in importations of salt beef, the casks containing this are labelled, but I do not know whether it is by International agreement.

2502. These labels are quite irrelevant for what we want?—Yes.

2503. (Mr. Field, M.P.) The frozen meat is not?—No.

2504. (Chairman.) Just one other question. You say that certain packages are opened by the Customs?—A percentage of packages.

2505. Can you tell us what proportion?—I can.

2506. What?—We have different proportions from different countries, and we open a proportion according to the quantity of goods in the entry. With regard to countries where tobacco is an unrestricted article we are more rigorous in the examination of goods coming from those places, than would be the case if goods came from countries where tobacco is not an unrestricted article.

2507. (Mr. Field, M.P.) For fear the tobacco is smuggled?—That is from a Revenue point of view. The percentage of the examination of goods is, roughly speaking, 5 to 10 per cent.

2508. (Chairman.) It depends on the country?—We open 5 per cent. or 10 per cent. in order to see the goods are in accordance with the description given on the entry, and to see that there is no contraband.

2509. (Mr. Bathurst, M.P.) You say that in your opinion the disinfecting of the holds of ships would take a

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considerable time and possibly involve demurrage. What sort of disinfection have you in your mind?—I was thinking of sprinkling with carbolic acid or something like that; a rough-and-ready kind of disinfection. I would not go so far as to say the holds should be lime-washed, which would take a longer time still.

2510. But even ordinary cleansing with possibly a spraying with carbolic acid would involve undue delay in your opinion?—It may.

2511. It would, you think?—It would.

2512. But still you think it would be justified; well, perhaps I will not press you?—It may or may not be justified.

2513. There is one question which you have not been asked which I should like to ask you: Are live fowls imported to any material extent?—Yes, we do get live fowls.

2514. Live fowls?—Not to any great extent.

2515. (*Mr. Field, M.P.*) Where do they come from?—I cannot say; I do not think we get them to any great extent. We get dead fowls from Russia.

2516. (*Mr. Bathurst, M.P.*) But there are occasional

imports of live fowls, are there?—I have never come across any in my experience.

2517. There is one other article to which no reference has been made, which has been mentioned in connection with one of these outbreaks, cabbages and lettuces; are they imported to any extent?—They are, from France.

2518. From France?—Yes.

2519. From France only?—Well, I think France only. I do not remember from my own experience any cabbages or lettuces being imported from Holland or Denmark.

2520. How are they packed as a rule?—Lettuces come in cases; the cabbages are packed in hampers.

2521. When you say in cases, do you mean in open crates or in closed cases?—I have no personal knowledge of these, but I believe they are imported in small closed packages.

2522. Closed packages, no danger of contact between them and other consigned articles?—Not with regard to these particular items mentioned.

(*Chairman.*) I think that is all; thank you, many thanks.

The Witness withdrew.

Professor SIR JOHN MCFADYEAN, LL.D., C.M., M.B., B.Sc., M.R.C.V.S., F.R.S.E., Principal and Dean, and Professor of Pathology and Bacteriology, Royal Veterinary College, called in and examined.

2523. (*Chairman.*) Sir John, you are Principal of the Royal Veterinary College at Camden Town?—Yes, sir.

2524. And you have kindly come to give us your views upon this question?—Yes.

2525. I have got the précis of your evidence and the first thing you would like to say a few words about, I see, is the nature of the virus. Would you tell the Committee that, first of all?—Yes, sir. I thought it was perhaps necessary, or at any rate that there might be a slight advantage to deal with this matter, because one sometimes hears it said that nothing is known about the cause of the disease. Now that is a very partial statement of the truth. What one knows is that the cause of the disease is something that multiplies enormously in the bodies of infected animals. That can easily be proved by experiment. If one collects the liquid from one of the blisters or vesicles in the mouth of an animal and dilutes it with water, so as to be able to weigh out small amounts of it, it can be shown—it has been shown—that as small a quantity as the $\frac{1}{300}$ th part of a drop of liquid may be successfully used to infect an animal by injection into the veins. If one succeeds in infecting an animal in this way, in the course of a few days it develops vesicles in its mouth and on its feet, and one can show by further experiment that the liquid in the blisters of this experimentally infected animal is just as highly charged with the virus as it was in the first case. That is to say, from the first animal experimentally infected one could collect enough material to infect many thousands of cattle, so that it is quite obvious that whatever be the cause of the disease it is something that has multiplied enormously in the body. And, of course, the only conclusion that one can draw from that is that it is a living thing, because one knows nothing else that has got indefinite powers of multiplication in the body. This living thing might conceivably be either a bacterium, which is a microscopic thing belonging to the vegetable kingdom, or it might be a microscopic animal organism belonging to the protozoa, and we know serious diseases, both of men and animals, that are caused on the one hand by bacteria and on the other by protozoa, and inasmuch as the actual cause of the disease, as I am going to explain, has not been seen, one has no certain knowledge as to whether this living thing is a bacterium or a protozoan parasite, but the affinities, so to speak, of foot-and-mouth disease are not at all with the diseases that we know to be caused by protozoa. Malaria, for instance, of man and a number of malarial diseases of animals are caused by a microscopic protozoa, and foot-and-mouth disease has no resemblance to those in respect of the symptoms or the course of the disease. On the other hand, it has rather a close resemblance to many diseases that we know to be caused by bacteria, and

there is therefore a very strong presumption that the cause of the disease is actually a bacterium. But about this cause or virus, we know more than that. We know that the cause of foot-and-mouth disease belongs to the class of what within recent years have come to be known as ultra-visible viruses or ultra-visible organisms, or—the term is perhaps open to less objection—filtrable organisms, and the virus is specially interesting, because, although we now know quite a considerable number of diseases that are caused by ultra-visible or invisible viruses, this was the first animal disease proved to be caused by an ultra-visible virus. If it would not weary the Committee I should like to explain how the discovery was made. It was made by Professor Loëffler, of the University of Griefswald, in Germany, and Dr. Frosch, who had been appointed by the German Government to investigate foot-and-mouth disease. Part of their investigation, naturally, was to see whether certain claims that had been put forward during previous years regarding the alleged discovery of a visible bacillus as the cause of foot-and-mouth disease were well founded, and they subjected all the claims that were then in existence of this nature to rigid examination, and satisfied themselves, and I think everybody who read the account of their proceedings, that none of these organisms was the cause of foot-and-mouth disease, that is to say, no visible organism that might be found in the material taken from a blister was capable of causing foot-and-mouth disease experimentally, and therefore it could not be the organism of foot-and-mouth disease. But among other experiments they thought that it would be worth while trying whether the liquid which is found in the blister of an animal affected with the disease had any power of protecting animals, of vaccinating them against the disease in virtue of something that was in the liquid in solution apart altogether from any bacteria that might be in it. They therefore passed the collected liquid from vesicles through a filter, a filter which according to all previous experience ought to have kept back any living thing that was in the liquid, and they injected this into animals in order to see whether they would be thereby protected, but to their surprise they found that the animals that were vaccinated or inoculated with this filtered fluid got the disease, and they got it apparently just as promptly as if they had used the liquid which had not been filtered. It thus appeared that the cause of the disease, whatever it was, must be extraordinarily small because it would pass through a filter or sieve that was quite efficient for keeping back the smallest visible bacteria. Well, that was presumptive evidence that the organism of the disease was exceedingly small, if not invisible, and further support for that opinion was obtained by examination of the material which had passed through

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the filter and which was found to be highly infective. It was found that microscopic examination of this material showed it simply as a liquid and nothing else, no visible particles in it, no bacteria to be seen in it, and yet it was proved that it contained the cause of the disease, because it could be used to produce foot-and-mouth disease in an experimental animal. And that is what one means when one says that the cause of the disease is an invisible virus. Nobody doubts for a moment that it is a bacterium, but it is a bacterium so small that it cannot be seen with the highest powers of the best microscope in existence. Uninstructed people are apt to think that there is no downward limit at all to the size of things that microscopes can make visible to the human eye. But that is a great mistake. Very high authorities believe that the modern microscope is hardly capable of any improvement, and it would be a mistake to suppose that there is any likelihood that the perfection of microscopes will ever show the organism which is the cause of foot-and-mouth disease. The smallest known, that is to say visible, bacteria have a diameter of about 1-125,000th of an inch, and it has been calculated that any living thing which is smaller than 1-250,000th of an inch can never be seen. One might prove the presence of this thing indirectly, but it can never be seen, and there is every reason to believe that the virus of foot-and-mouth disease, since it passes quite freely through a sieve or filter that will stop very small bacteria, must be considerably smaller than the 1-250,000th of an inch in diameter. So that, in my opinion, there is not the least ground for expecting that anybody will ever be able to demonstrate the virus of foot-and-mouth disease in the sense of being able to put it under the microscope and say, "Look through the microscope and you will see the 'organism of foot-and-mouth disease.'" But then comes in another point which is of interest in this connection. One can easily imagine that a living thing, which individually is beyond the range of vision, might, when it grew and multiplied, build up masses of material that would become visible to the naked eye; in fact, however small a living thing may be, if it multiplies abundantly, the collective product of multiplication must become visible to the naked eye. Well, a curious and unfortunate fact is, that so far, with one or two doubtful exceptions, all the organisms that are ultra-visible have refused to grow outside the body; that is to say, they are not cultivable under artificial conditions. One would not be justified in saying that the prospect of being able to cultivate any of these viruses artificially is so hopeless as the prospect of being able to see the individual organisms, but, at any rate, the attempt has frequently been made, it is being continued in the case of many other ultra-visible organisms at the present time in laboratories in Europe, and the result so far is failure. It would be an enormous advantage if one could cultivate the virus of foot-and-mouth disease outside the body, if one could cultivate it in laboratories, in test-tubes, because one of the principal barriers to ready investigation of the disease at the present time is the trouble of getting a sufficient quantity of the virus for experiment. You can only obtain it from animals that are infected with the disease. It is practically useless if you take it from an animal that has contracted the disease naturally, because by the time you get that animal the blisters are probably broken. At present, if one wants to investigate the virus of the disease, he has to have a large series of experimental animals, he has to infect them, and he has, so to speak, to stand by and wait for the development of the blisters in the mouth. He has then got to tap these, and the collected liquid is what he calls the virus of the disease. These are the facts with regard to the nature of the virus that I wanted to lay before the Committee.

2526. Then, I rather gather from your evidence that you view this foot-and-mouth disease virus as the most dangerous and the most contagious almost that we have got to contend with; is that not so?—Yes; I think there can be no question that foot-and-mouth disease is the most contagious or infectious disease of animals with which we are acquainted; even more contagious or infectious than cattle plague.

2527. More than cattle plague?—More than cattle plague, yes.

2528. I also gather from your evidence and from your précis that you have sent us, that the cultivation of this virus under artificial conditions has failed?—The attempt to cultivate it has absolutely failed.

2529. But possibly the difficulty might be overcome?—Well, everybody has been hoping for years that it would be overcome. And one knows that certain bacteria that one can now cultivate resisted attempts that were made to cultivate them for a considerable period; that is to say, new methods were discovered; and it is quite conceivable that a method of cultivating the organism of foot-and-mouth disease may be discovered.

2530. Then, may I take it from you, that if you had more facilities for research, more money given towards research, you would be able possibly to find out more about this disease than you have already found out?—I think, sir, one might put it even stronger than that, and say, that if a carefully thought-out plan of research were put into execution, the knowledge regarding foot-and-mouth disease could most certainly be extended, but I should be very sorry to say that within any measurable time one could invent a method of cultivating the virus outside the body.

2531. But you would welcome, I take it, more facilities and more money being given for research, not only of foot-and-mouth disease, but of other diseases of animals, would you not?—Oh, certainly, sir. I know that there are people who draw a distinction between what they call scientific knowledge and practical information, but there is really no sharp line of demarcation between them. It is quite true that what is regarded at the moment of discovery as a fact of purely scientific interest may not be applied to any practical purpose, but one never knows what may ultimately come to be the practical application of what is called a scientific discovery, and for that reason, of course, I should support the so-called scientific investigation of every disease, the further investigation of every disease.

2532. Do you hope for good results from this scientific Commission, which is going to be sent out by the President to India, to examine into this disease?—Well, sir, that depends greatly upon what are the things that the President particularly wants to know. What I think is, that before anyone recommends an investigation of that sort, he ought to be able to specify the points on which he desires further information, and secondly, it ought to be reasonably probable that an experimental study of the disease would provide the information which is desired. As I have just said, it is quite certain that knowledge regarding the disease could be extended, but, before lightly approving of setting up an elaborate and costly experimental inquiry, I think it ought to be remembered that this disease has been painfully investigated in Germany for the last 10 or 12 years, possibly more, by some of the best men in Germany. Now, it is quite true that they have added some very important facts to our knowledge, but I do not know that they have added very much that is of particular interest to this country in connection with its own difficulties. And I am not sure that the lacunæ in the knowledge that this Committee, for instance, would most desire, would certainly be filled up by an experimental inquiry. It is possible that such an investigation might lead to the discovery of a method of cultivating the organism outside the body, and I have already said that that would be an enormous step in advance. After what I have already said, it is unnecessary to say to the Committee that it is not necessary to set up a Commission to search for the bacillus of the disease. When one sees the claim made that somebody has discovered the bacillus of foot-and-mouth disease, it is simply evidence of ignorance, and to encourage the research for a visible bacillus is evidence of ignorance. An experimental inquiry, properly planned, would certainly provide more information than we possess at present as to the vitality of the organism outside the body. One could determine how long, in various conditions, the virus of foot-and-mouth disease can live. But, I confess, having thought over the thing a good deal within the last fortnight, that it does not seem to me that the

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difficulties of this country would be sensibly lessened whether one had to report that the virus could only live for a couple of months, or that it could live for a couple of years.

2533. You may have heard that there have been two or three questions by two or three members of the Committee about an experimental station for this country, and, of course, the witnesses who have given evidence on that have been very strong against it, and naturally so to my mind, anywhere near this island. Would you think that an experimental station, if it can be found with safety some miles away from this country, would be of assistance to your own profession to go into this question much more than they have been able to do in this country?—Well, I have already said, sir, that I should approve of an experimental inquiry in the sense that I am quite sure that existing knowledge could be extended, but I understand that what I am now asked is, whether one could contemplate the setting up of such a station near this country?

2534. Yes, within some miles?—Within some miles. Well, I should say that that is really largely a question for the stock-owners of this country who would have to be told, what they already know, that it would involve an increased risk of foot-and-mouth disease being imported into this country. I say an increased risk, because as long as foot-and-mouth disease is in existence anywhere in Holland or Belgium or France—

2535. (*Mr. Field, M.P.*) Germany?—Germany not so much, I think. I believe experience would go to show that the danger is greatest—and naturally one would think it must be greatest—the nearer the source of infection is to us. There must always be a risk as long as the disease is existent there, and, of course, that risk is increased if you create a new centre actually nearer. If you were to ask me, sir, if I think the danger is a great one, I should probably answer that, with very rigid precautions, the danger would not be a great one.

2536. (*Chairman.*) Well now, you are to go on to the source of the recent outbreaks, Sir John?—Yes, sir. Well, in the first place it is almost self-evident that the disease has been imported, that is to say foot-and-mouth disease is in no sense a natural disease in this country. If any bacterial disease can occur in a country apart from importation, it must mean that the conditions in that country admit of the organism multiplying outside the body. If we take, for instance, lockjaw in animals, which is a bacterial disease, we know that lockjaw is caused by a germ which multiplies quite commonly in the soil, probably is found in the soil, outside in the garden here, and, therefore, if one raises the question whether foot-and-mouth disease is indigenous, one has to consider whether foot-and-mouth disease virus might perhaps multiply in the soil. Well, I hold that possibility to be absolutely excluded in view of the impossibility of cultivating the organism under the most advantageous circumstances that one can offer to it. It cannot be induced to grow in laboratory media of any sort or kind, and, therefore, it is out of the question to think it multiplies in soil or water; it multiplies only in the living body. Then there is the question whether, although it cannot multiply, it might possibly survive over very long periods, because, as one knows, this country, not so very long ago, was overrun with foot-and-mouth disease, and it is *a priori* conceivable that the germs of the disease might have been left lurking in various parts of the country, and if that were so, one might expect from time to time that one would have fresh outbreaks. The actual facts negative any such view. In the first place, when the disease was quite common in this country, there was abundant experience to show that after a farm had become infected and had been quarantined for a particular period and then set free, it was a rare occurrence for the disease to crop up again without the introduction of fresh animals, and that, of course, is very strong evidence that the virus of the disease, as a rule, disappears quickly outside the body. And then there is the further fact that the recent outbreaks in this country, with, I believe, one exception, have not been on places where there was any history of a previous outbreak at all, and in that one instance the antecedent outbreak was, I believe, some 20 years ago, and it is wholly incredible that

the virus could have retained its vitality for 20 years in soil, or anything like that.

2537. Before you go on, Sir John, your evidence to-day proves very strongly that in the Somerset outbreak, where the people down in that part thought that this disease had been lying dormant in the rhines, which had not been cleaned out for 30 years, is absolutely fallacious and absurd; you heard that, I suppose?—Yes, sir. It is not an explanation which I should myself accept at all. I recently got from Professor Bang, my friend who is at the head of veterinary affairs in Denmark, a paper which he recently read before a society in Denmark, in which he gave the history of foot-and-mouth disease in that country, and from that I have culled some facts which I think are of very great interest to this Committee in particular, as bearing upon the persistence of the virus outside the body in perfectly natural conditions. I picked out from the report four instances in which the circumstances appeared to prove almost conclusively that the virus did persist for periods of from six months to a year.

2538. (*Mr. Field, M.P.*) Six months to a year?—Six months to a year. For instance, on the 16th of November 1892, an outbreak occurred at a particular farm. It was dealt with successfully, and the disease reappeared on that same farm in the November of the following year. That was 12 months. Second, in the case of another farm, the first outbreak occurred in May 1893. It was successfully dealt with at the moment, and the disease recurred in November of the same year, a period of about six months. Then on a third farm the first outbreak was in December 1892, and the disease recurred in December of the following year. Then there was a fourth farm in which the first outbreak was in March 1893, and the disease recurred in February 1894; it was 11 months. So that the period separating the two successive outbreaks varied from six months to 12 months. Well now, in case it might be said that these were not strictly recurrent outbreaks, but that the second outbreak was due to the fresh introduction of the disease, it has got to be mentioned that the disease existed nowhere else in Denmark at the time when the second outbreak occurred. So that there seems to be hardly any escape from the conclusion that, on these particular farms, the disease was actually dormant during that time.

2539. (*Chairman.*) Eleven months?—Eleven to 12 months. At all these four places, when the disease recurred, all the cattle which had been born on the place since the last attack were killed, and also all the cattle which had subsequently been bought in, but all the animals which had passed through the disease on the occasion of the first outbreak were left alive, and none of these contracted the disease; an interesting point as showing the length of time during which animals remain immune. On the occasion of these second outbreaks very thorough disinfection was practised. He is particular to state it. But, in spite of that, at one of these four farms that I have mentioned, there was actually a second recurrence of the disease, that is to say there were three successive outbreaks.

2540. (*Mr. Field, M.P.*) Three outbreaks?—Three outbreaks; two recurrences. And this second recurrence was interesting, because, on inquiry, it was found that shortly before the disease showed itself, the cattle had, for the first time, been fed with hay which had been lying in a loft over the cow-house since the preceding outbreak. That hay was burned, and all the other hay that was thought might have been infected, and there was no subsequent recurrence on that farm.

2541. (*Chairman.*) What you have been telling us about Denmark, you have not found, by experience, to happen here, because I understand from you that outbreaks have not taken place, as a rule, on the same farm where they had taken place before?—That is so, sir. To adopt a popular expression, these are the exceptions which prove the rule, and it is worth noticing that, in the large outbreak of which these four farms formed part, there were 398 farms involved in the disease, but there were only four on which there were recurrences, so that it is perfectly clear that the survival of the virus outside the body for any long period is an exceptional circumstance.

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2542. Then, I may take it, which we have already had before, that the virus could remain intact so many years on account of the rhines not being opened, is a fallacy?—I do not think, sir, it should be accepted. I noticed there were some other interesting facts in connection with the Danish experience. The suggestion has been made and considered whether animals that have passed through an attack of foot-and-mouth disease and apparently recovered, might not subsequently serve as what are termed "carriers." Some extraordinary facts in that connection have come to light within quite recent times, such as that people who have had typhoid and apparently made a good recovery, for all the rest of their lives, are exceedingly dangerous to people in contact with them, and it has been surmised that this might apply to foot-and-mouth disease, but the cases that I have quoted from Denmark go against that view. These recurrent outbreaks were not the result of there being any "carrier" in the herd, because all the animals that had passed through the previous outbreak were left alive, and in spite of subsequent re-stocking, the disease did not break out again. Of course, if there had been a "carrier" on the farm, one should have had fresh outbreaks, as often as you introduced new animals. Then, another point that I was interested in noticing was the evidence that farm-yard manure sometimes remains infective for considerable periods. In one or more of these cases of recurrence, the recurrence was ascribed to the carting out of farm manure, and one other case is mentioned in which the disease, after a considerable period, broke out not on the original farm, but on a neighbouring farm, and that was ascribed to the carting out of manure from the farm first attacked. It was noticed that when it was spread on a field to be ploughed down, large numbers of crows settled on it and subsequently flew to a turnip pit on this other farm, and it was believed that that was how the disease spread in that particular instance.

2543. Now, Sir John, you have given us a very interesting account of the virus and the source; now would you tell us a little, coming nearer home. Of course, what we have got to try and find out on this Committee is some reason for these outbreaks that we have had, and what steps we can take to avoid them in the future, and, of course, one of the things which has come up before us largely is the question of the imports which are brought in for the feeding of animals, and also such things as hides, and hay and straw for packing sheep's heads. Now, do you think, in the first place, there is much danger of importing disease into this country by means of hides?—Well, I think, sir, it is very difficult to say what is the relative danger of different things. What one must admit in advance is, that anything whatever which comes in contact with an infected animal with foot-and-mouth disease, or with its discharges, may serve for a considerable period afterwards as what is called an intermediary bearer. Human beings, and all sorts or at least a great variety of bodies that one can think of, may introduce the disease, and I think hides would certainly have to be reckoned as a source of danger. It is conceivable, for instance, that cattle might sometimes be slaughtered during the incubative stage of foot-and-mouth disease, just before the eruption of the vesicles, and one knows that that is a time at which the whole blood of the animal is charged with virus, and the skin of such animal would, I imagine, be very dangerous. But even the skin of an animal slaughtered at a later stage would be dangerous, because very likely it would be soiled with saliva or faces which might contain the virus. As evidence of the way in which disease can be carried, I might quote the statement made by Professor Bang, that it was believed in some of their earlier stamping-out operations the disease was spread by the professional butcher whom they employed. Apparently in these cases the cattle were killed and their carcasses were dressed by ordinary butchers, and, I think, disposed of for food, but in Denmark at the present time that procedure has been given up, and when large numbers of animals are killed at a farm they are slaughtered simply by farm people, and they are buried in a pit so that there is less opportunity for the spread of the disease by the clothes of persons.

2544. Were the butchers disinfected after dealing with the cattle?—I suppose an attempt would be made to disinfect them. That is not expressly stated.

2545. You do not exactly know?—It is not expressly stated, but I think one may assume that the usual precautions were taken.

2546. (*Major Dunne.*) Then they do not burn the carcasses?—They do not burn them, no; they bury them.

2547. (*Chairman.*) Well, then, Sir John, I suppose—to put it shortly, to sum up, as other witnesses have said—that as long as the Continent is absolutely a mass of disease, we are always liable to spasmodic outbreaks of this disease?—Well, experience shows that when the disease is very prevalent in Holland, Belgium, or France, we do get outbreaks at intervals, and the experience of Denmark is absolutely the same. They have had quite as many outbreaks within the last 10 years, I believe, as we have had, and the experience is also similar, in that in both countries the outbreaks have been mostly contiguous to the sea. With very few exceptions, for instance, the Danish outbreaks have been in the southern part of the Islands, nearest Germany. I am aware that some of our recent outbreaks have not conformed to that rule, but I believe that a comparison of the incidence of the disease in the western part of the Continent, with the incidence of outbreaks in this country will show that they correspond, and I, therefore, believe that there are probably no precautions possible that will eliminate this risk. I think that we have got in the future to make up our minds that, whenever foot-and-mouth disease is common in Western Europe, there is a chance that we may have outbreaks too.

2548. Always liable?—Always liable.

2549. To spasmodic outbreaks?—Yes.

2550. (*Mr. Field, M.P.*) No matter what precautions you take?—No matter what precautions are taken. I think that is the great risk that the disease may be very prevalent in France, Belgium, or Holland, and, in my opinion, the great safeguard, indeed the only safeguard that this country can have is to have a properly thought-out and organised system of pouncing down on the disease when it is notified and stamping it out.

2551. Stamping it out at once?—Stamping it out. One very considerable danger is, of course, that the disease might not be recognised promptly. If one could obtain an assurance that no case of foot-and-mouth disease would escape detection after the onset of the symptoms for a week or two, I believe in this country that there is very little danger of a serious outbreak, because, I believe, judging from past experience, if the Board of Agriculture get early notification of the disease, we can rely upon them to stamp it out.

2552. Sir John, do you think it would be ever possible that common action with continental countries should be taken as regards this disease?—Well, sir, I have read the evidence given on some of the previous days. I notice that this question was raised, and I confess I do not clearly gather what is meant by common action. The circumstances of different countries with regard to foot-and-mouth disease are very different. In the first place, there is a radical difference between this country and most of the Continental States, in that this country has no land frontier, and that difference might impose a difference in the method of attempting to prevent the introduction of the disease or of dealing with it. But a far greater difference depends upon the varying extent to which the disease has already got hold of a country. I believe that there is no essential or important difference of opinion between the veterinary authorities in different countries as to how one should deal with foot-and-mouth disease. Foot-and-mouth disease is a subject which has figured, I believe, on the agenda of all the International Veterinary Congresses for the last 20 years, and, as I say, there is hardly any difference of opinion as to how one should attempt to deal with the disease. But, it seems to me there would be no use in offering advice to Germany, at the present time, as to how foot-and-mouth disease should be dealt with there, when the country is already over-run. It would be childish to hold up ourselves to them as an example in that connection, in the first place, because they have got a huge land frontier,

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and they owe their recent great outbreak, and probably the previous ones, to the importation of the virus from Russia. They contend, I know, that Russia in Europe gets it from Russia in Asia, and so on, but I do not know exactly how, in Germany, the earlier outbreaks were dealt with. I think that probably an attempt was made to stamp the disease out, but, as happened in the past in this country, the disease soon got spread so widely that it would have been madness to attempt to deal with it by methods of slaughter, and at the present time they employ methods of repression which we ourselves should be certainly confined to, if once the disease got out of hand here.

2553. You say, this question of foot-and-mouth disease has been before International Veterinary Congresses for some 20 years?—Yes, sir, within my knowledge.

2554. And you are to have another International Veterinary Congress, I understand, in the year 1914?—Yes, sir.

2555. And, I suppose, this question will come up again most probably there?—It is sure to.

2556. But that is how we go on year after year, and nothing particular is done as regards other countries?—In anticipation that I might be asked something about this, sir, I looked up the proceedings of some of the International Veterinary Congresses last night, and I find that as long ago as 1883 at the International Veterinary Congress that was held at Brussels, the question of securing uniformity in the method of dealing with contagious diseases throughout Europe was a subject for discussion, and they passed a series of resolutions, the effect of these being as follows: In the first place, every country in which any one of the serious specified diseases broke out was to be obliged to notify the fact immediately to other States. Second, every country was to publish a bulletin giving from week to week the particulars with regard to the incidence of these diseases in that country. Third, every country was to put in force against every contagious disease the measures which general experience up to that time had shown to be best. That was rather vague, but it was as precise as one could make it. Fourth, that each country was to show that if what are called certificates of origin of health are given along with animals that have to be moved about, these had the greatest guarantee possible of authenticity. Fifth, they attached a good deal of importance to this, there was to be started an International Veterinary Bulletin published somewhere in Europe which periodically would always show exactly what the incidence of any one of the contagious diseases was in any European country. The subject came up again at the Congress at Berne, at which I was present along with the late Mr. Cope, as a representative of the Board of Agriculture. The question of having an International Convention to draw up regulations with regard to contagious diseases was on the agenda, and I admit that I was one of those who felt obliged in the interests of this country to speak against the official resolution of the Congress, because it was quite obvious that the object of securing an International Convention was that the restrictions which certain countries had imposed on traffic from others were to be broken down. For instance, it was proposed that if a country could show that it had a well-organised veterinary system, and foot-and-mouth disease broke out in it, then the neighbouring country was not to prohibit from the whole of the country, but only from a restricted area round the source of the outbreak. I ventured to speak against the view which commended itself to the majority, and said that I felt sure that Great Britain would never be bound by any Convention which entailed a result like that.

2557. Did the Congress adopt that view?—No, sir. Although they passed a resolution asking the Federal Government of Switzerland to approach the different Governments with a view of getting such a convention, nothing came of it. I suppose the request was addressed to the various Governments, and it simply became a dead-letter.

2558. Quite right.—I agree.

2559. (Chairman.) I see you say that the greatest safeguard which this country could have is an organised service ready to deal with the disease when it is detected. Well, now, I suppose you will acknowledge that the

present regulations and the way they are carried out by our Agricultural Department in this country is as good as it can be?—Well, it has the merit of success, sir, which is the greatest merit it can have.

2560. Supposing we were to have a large outbreak here, which I hope we may not, do you think we are staffed enough for a large outbreak?—You mean, sir, you are including in the staff the officers, veterinary and other, of the Board of Agriculture itself.

2561. Yes?—Oh, no, sir. If we got an outbreak such has been the experience of Germany and France and so on, they could not cope with it.

2562. Or if we had outbreaks like we had in the seventies?—Oh, no, they could not possibly cope with it.

2563. But, under our present regulations, you do not fear that such an outbreak could ever take place in this country, do you?—I see no reason to anticipate it. One has to remember that, owing to the recurrence of these outbreaks during the last few years, the public attention and the attention of stock-owners is much more awake than it was during the five or six years when we had no cases; and what I think is that, supposing we have no more outbreaks for five or six years, then the disease will be forgotten; and if you had an outbreak, it might not be identified as quickly as one would like.

2564. (Mr. Field, M.P.) You are of opinion that this disease is not indigenous in the three kingdoms; that it must be introduced. There is nothing in the soil, the atmosphere, or anything else that would produce this disease?—That is my opinion.

2565. Then your clear opinion is that the outbreaks that we have had recently were all imported?—That is my opinion.

2566. By some means or other?—Yes.

2567. You have not quite made up your mind as to the method of importation; how the infection is carried?—I have not made it up at all.

2568. You do not agree with the statement that was put forward here that the disease could lie dormant in a ditch for 20 years, or something of that kind?—No, I do not believe that; I believe there is no evidence to support that view.

2569. Have you formed any opinion as to how we could make it mandatory on stock-owners to give an early notification?—It is mandatory now, sir, I think; I mean it is their duty under the Contagious Diseases Acts.

2570. Can we fine them?—Certainly.

2571. Have you had many cases of that?—People are frequently fined under those Acts for not reporting other diseases such as swine-fever and sheep-scab, and the law is just the same with regard to foot-and-mouth disease.

2572. I only want to ask one question more. The suggestion was thrown out here that there ought to be a post-graduate curriculum for veterinary surgeons with regard to this particular disease and other diseases; would you favour that?—Oh, yes. I am in favour of the institution of a post-graduate degree, not specially with regard to foot-and-mouth disease. In my view there are other things that are far more requiring post-graduate study in this country than that, but I think we want such post-graduate studies as are given to medical men who want to become officers of health. Such post-graduate study is given now at the Royal Veterinary College. Within the last seven or eight years at least 300 members of the veterinary profession have gone through a post-graduate training, but there is no recognised post-graduate diploma instituted yet.

2573. I take it, Sir John, that you do not favour the idea of starting an experimental station near this country?—I do not.

2574. Because, of course, that would involve that foot-and-mouth disease would be in this country, and then, of course, the other countries would not take our cattle?—Well, that had not occurred to me, but I agree.

2575. That would be a natural consequence I suppose?—It would be a very great consequence, probably greater than the objection which I raised that it would create a new risk of infection.

2576. A new risk of infection, and probably prevent

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us from being allowed to export our cattle?—I think that is very likely.

2577. So that the cure would be worse than the disease?—I think that is also possible.

2578. Do you see a way towards all countries adopting similar precautions in the way of the convention that you mentioned?—I do not think, sir, that would be of the slightest advantage.

2579. You do not think it would work?—No. I think for reasons which I explained to the Chairman the regulations can hardly be expected to be rigidly uniform but that as a matter of fact there is no disagreement as far as I know regarding the method of dealing with foot-and-mouth disease in any of the European States. If they were in our position and free from disease they would endeavour to deal with fresh importation by slaughter. At present that is economically impossible, just as we had to recognise it was economically impossible in this country once.

2580. In the case of tuberculosis, for instance, at the present time?—Or as it was in the case of foot-and-mouth disease 30 years ago.

2581. (*Major Dunne.*) What is the length of time of incubation?—As in other contagious diseases, that varies considerably. I think, as a rule, in natural cases it is from a few days to a week, but it probably depends in natural cases on the amount of the virus which the animal has taken in, and one knows that in experimental cases you can have the period of incubation reduced to about 24 hours, and it is said that there are natural cases in which the period of incubation is no greater than 24 hours.

2582. Then, Sir John, it is of course quite clear from your evidence, and other evidence that we have received, that when the disease is rampant in a neighbouring country the risk is so much the greater; that is quite clearly established you think?—Yes.

2583. Then, in your opinion, should we be justified in taking such precautions, in order to prevent any risk of infection here, of going to the extreme length of practically prohibiting any articles coming from abroad which could possibly carry infection?—Oh no, sir.

2584. In other words, is the risk sufficiently great to warrant us in making further restrictions beyond what are already imposed as regards bringing in imported articles?—Well, to answer that question generally, I should say that it is out of the question to think that one could forbid the importation of any sort of thing that conceivably might bring the virus from a foreign country. If I were asked to be more particular I am afraid I have not sufficient knowledge. But taking a case in point, if I were asked: Do I think that the importation of hides from the Continent should be forbidden in order to reduce the chance of our having an outbreak of foot-and-mouth disease, I should say, Certainly not; that the lost trade—I am speaking without any pretence to accurate knowledge as to that trade in hides; I imagine it to be very great—that the loss to trade would far exceed any actual loss that we have had from foot-and-mouth disease during the last 30 years; and so on with regard to other articles. It is a case of balancing the one loss against the other, or the certain loss against the anticipated loss.

2585. We have had a good deal of evidence as regards this question of this packing material; would you, from your knowledge, say it was worth while restricting the use of packing material in order to prevent the possible risk?—No, I should not think that it is worth while interfering with packing material until the Board of Agriculture has better evidence than it possesses now, I understand, to show that in any given case packing material has brought the disease. I believe that in most cases packing material can be actually excluded, and one knows that there must be a very great amount of packing material introduced into this country; and, after all, the number of outbreaks that we have had is small.

2586. You do not think there is any very great risk attached to this packing material?—I do not.

2587. Then that would apply equally, I suppose, to the importation, for instance, of foreign oats, of which we have heard a certain amount?—Oh, yes; I think it applies to that, too.

2588. (*Mr. Morrison.*) You said, Sir John, that the

virus multiplied itself very rapidly in the body, but it has been found impossible to cultivate it outside the body?—Yes.

2589. That seems to a scientific man a strange thing that you cannot bring some similar conditions into play so as to cultivate that outside. Have you any theory as to the exceeding difficulty of cultivating this virus?—Well, it illustrates the difficulty, but does not explain it, if I say that we are acquainted with thousands of animal parasites, for instance, which absolutely cannot live apart from their host. There are parasites of men and horses, and so on, that cannot live except on their host, and apparently this applies to some microscopic creatures, too. I cannot pretend to say why it is, but there are micro-parasites, visible ones, the cause of serious disease, that also at the present time resist all attempts to cultivate them. For instance, the organism which is the cause of human malaria is not a small thing; it can be seen through the microscope quite well, but nobody has been able to cultivate that outside the body.

2590. I suppose, however, that in time you think it probable that it will be possible to cultivate this virus?—Well, I think it possible.

2591. Not probable? Have you any theory as to the materials that are most likely to carry it; I mean to say, moist or dry materials, or in what condition do you think they would be most likely to carry it?—Well, from what one knows about the harmful effect of dessication upon bacteria in general, one would suppose that moist things, or partially moist, things would be the most dangerous.

2592. Do you think that it comes from the breath of the animal suffering?—No, sir. I believe that there is no organism that is actually exhaled with the breath; no living thing is exhaled with the breath. When breath is thought to be affected it generally means that there are particles of mucus and things from the mouth, and so on, that are infected, but the pure breath as a gas is not infected.

2593. You mentioned a case where the hay in a loft retained the infection?—Yes.

2594. That must have gone up in dust, I suppose?—Yes. I freely admit that it is very difficult to figure to one's mind how the virus of the disease, which after all must be a living thing, is actually translated. We know that in the case of the visible organisms the range with which they can be carried or are carried by wind is comparatively limited; but I find that Professor Bang is so troubled to find any explanation of the outbreaks in Denmark, from mere consideration of the risk involved in men and things coming over to that country, that he thinks it may actually come all that distance in the wind.

2595. Has he actually put that statement forward?—Certainly.

2596. That it may come all the way with the wind?—Yes. He thinks it may come all the distance from Germany with the wind. He also suggests as not impossible that it may come with insects that are blown long distances with the wind.

2597. You give the result of his researches to show that the germ of the disease could remain about the place up to about 12 months. Was that in accordance with your expectations of the life of the germ before you saw this?—Well, in a sense it was contrary to one's expectations, because, as I have already said, there is no manner of doubt that, as a rule, the virus dies out within a short period. As a rule I say, because there were only these four cases out of some hundreds of infected farms, and speaking from my own recollection I believe that in this country when the disease was common it was a very rare experience to have a recurrent outbreak without the introduction of fresh animals, so that in that sense I should not have expected that the virus would have been dormant for 12 months in those cases. I may add that it was also a longer period of resistance or retention of vitality outside the body than one would have been led to expect from the investigations of the German authorities whose names I mentioned, Professor Loeffler and Dr. Frosch. They did not find, so far as I remember, that the virus was alive for such a period as 12 months, even when they kept it in a state of

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purity and in hermetically sealed tubes. But that apparently only proves that an hermetically sealed tube is not the best place for preserving the vitality of the virus.

2598. In view of this statement by Professor Bang, extending the life of the virus, as far as your knowledge of the virus is concerned, for 12 months, you would not rule it as an impossibility that some future evidence might be brought to show that it would last two or three years?—No, I could not rule that out.

2599. I suppose you admit that there are a great many points in connection with this subject which are yet to be found out; a good many things that we would be all the better to know that at present we have no knowledge of?—Yes, I think a good many of them are past finding out.

2600. Have you any practical suggestions to make as to what should be done in order to get at these facts?—Which facts, sir.

2601. For instance, we want to know how long the disease is virulent, when a diseased animal becomes infective, when it ceases to become infective, and a good many things of that kind, which, I may say, are things which we do not know.—You have not, sir, mentioned any that are, as I should say, past finding out. I agree with you, in all probability these could be determined.

2602. I ask you the question in view of the fact that we have discussed the possibility of an experimental station.—Yes, sir.

2603. I want to know have you any practical suggestions as to how we could set about this investigation?—I really would not attempt to deal with such an important point as that off-hand. It would demand very careful consideration and the drawing up of a regular plan. But might I say, sir, that when I said some of the things we would like to know were, in my opinion, past finding out, I was thinking of the possibility of ascertaining how the virus comes into this country, that is, to trace it from Belgium or Holland here, I believe that to be impossible by experiment.

2604. But you agree that an investigation is called for?—I agree that it is desirable in the interests of science. So far as I can see it is not likely to bring any fresh knowledge that would have much bearing on this country's difficulties. I can believe that new knowledge might be discovered that would be very valuable for the countries which are already over-run by the disease. For instance, a method of protective inoculation that is both safe and not too expensive might be discovered, but this country is not particularly interested in that at the present moment.

2605. There is the danger of our ordinary practitioner not being able to identify the disease when he sees it for the first time; would it not be possible in our colleges to devise some perhaps better method of showing him exactly what the disease is like?—I do not think so, sir. We can show him good plates, I mean drawings of the condition, we can show him the actual preserved specimens of the disease, and short of being able to produce a case experimentally for his instruction I do not see what we can do. But, as I indicated in my examination-in-chief, I do not think that that is really a matter of very great importance, because there is no evidence to show that this country has suffered anything, so far, from the failure of a veterinary surgeon to recognise the disease. I believe it would save a certain amount of inconvenience to the Board of Agriculture if veterinary surgeons were never in doubt. I mean at the present time there are a certain number of, I believe, false-alarms; in a sense I hope they will continue.

2606. Would it not be possible to institute a short course, say abroad, so that veterinary surgeons might have an opportunity at slight expense to study diseases, not only this disease but other diseases in connection with their profession, either at foreign universities or in foreign countries where outbreaks occur?—Yes, but I was wondering what country that would be. It is perfectly true that at the present moment you can get material for practical teaching regarding foot-and-mouth disease in Germany. You would not get it at a University there; you would have to go away out into the country, and I very much doubt whether the authorities of that country would sanction it. Then it is quite likely that

in the course of a year or two the disease will almost or quite die out in Western Europe as it has done in the past. Then in order to get our material for practical teaching we should have to send to Russia perhaps, so that I do not think it is really a practicable proposal to suggest that the veterinary surgeons in this country should besent to a foreign country to be made acquainted, so to speak, in the flesh with the different diseases.

2607. You think there is a considerable danger of the owner not recognising, of suspecting, the disease. Could you meet that objection in any way by any course of instruction or lectures at the time when disease may be prevalent or common on the Continent?—No, I do not think you could get at anything like the whole number of stock-owners by lectures or anything like that. But I can remember when rabies was common in this country the authorities were very much alive to the importance of the disease being recognised by owners in the dog, and a suggestion was made that a short statement of the symptoms of rabies in the dog should be printed on the back of dog licences. Well that was, I think, an unwise suggestion, because it would have led to a very large proportion of dog-owners imagining that they saw the symptoms of rabies in their own animals, but it did occur to me whether it might not be worth while to put some reference to foot-and-mouth disease on some Government document that goes to all stock-owners, such as the return with regard to the number of animals. It would not involve very great expense and I do not think it would lead to very many false alarms because the combination of disease of the mouth and disease of the feet in cattle is exceedingly rare in any other disease than foot-and-mouth disease and that is what cattle-owners require to be warned against, never to fail to suspect foot-and-mouth disease when an animal is slaving and lame, and I believe if the stock-owners of the country all knew that, and remembered it, then every case would be promptly reported.

2608. Then as regards importation without prohibiting certain articles that may be dangerous, I suppose you would think that possibly the Pasteurisation of milk, for instance, would be a good step to take?—Oh, yes. I think, sir, it might be put stronger. I really think it is a necessary step. It is a remarkable thing that in these infected countries they will not allow the circulation of their own milk until it has been Pasteurised, and I think if they regard it as necessary to Pasteurise the milk for their own consumption they might quite well be asked to Pasteurise what they intend for export.

2609. And I suppose that could easily be carried out by our own Government; they could easily prohibit it except under these conditions?—It would be very easy to ordain that milk shall be Pasteurised, and it is also very easy to determine on this side whether it has been Pasteurised or not. There is a very simple test, at least, two tests, by which one can tell immediately whether milk has been Pasteurised or not.

2610. Would you regard the importation of calves in their skins as a source of danger?—Certainly.

2611. And what would you suggest as a means of meeting that danger without interfering too much with trade?—Well, I am at a loss to say. I do not think you can disinfect a calf.

2612. Do you think that a careful inspection by a veterinary surgeon on this side would meet the case?—I think it would go a long way to reduce the risk. I think one could practically exclude the risk of an actually diseased animal being brought in. But the calf might be contaminated with the virus; it is conceivable that it might even have been in the incubative stage, and nobody's inspection would serve to detect the danger then. But again I might say experience indicates that this risk is a very small one, we have had so few outbreaks.

2613. Then you think if it could be done without undue interference with trade that there should be a disinfection of skins before they are shipped for Great Britain—salted skins?—Yes, I agree.

2614. So it comes to be in these matters of milk, and so on, perhaps vegetables too, whether it is not an undue interference with trade?—That is so.

2615. If it could be done without that you would support it?—I should approve.

2616. (Sir Harry Verney, M.P.) I just wanted to fol-

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low up one question of Mr. Morrison's. Then you accept the idea that the virus remained in the ground for 12 months?—Not in the ground; it remained in the premises somewhere; it was not certainly in the ground.

2617. Where then?—I think it is believed in these cases it remained in the hay or in manure.

2618. In manure? but for 12 months?—For 12 months.

2619. You accept that?—Oh, I accept that, yes.

2620. Could you give any idea what would be the minimum life of the virus if it was exposed to sunlight or whatever was most likely to kill it?—No, I could not.

2621. But is it a question of months or hours or weeks?—I should say in all probability in midsummer it would be a question of a few hours.

2622. Of 24 hours probably?—Oh, less, I should think.

2623. So that you think it could vary from a few hours to a year, the life of the virus?—Well, all that one can say is that if one accepts these cases, the period has by them been extended to a year, but I tried to explain that there was evidence showing that survival for such a period is absolutely exceptional.

2624. Mr. Morrison went on to ask whether you could also accept two or three years. You are not prepared to deny that it is conceivable?—Oh, no. I deny all information regarding the possibility beyond a year, and therefore I do not reason about it.

2625. I see. There is just one other point; you told us in the very beginning your experiments on animals with the filtered liquid; you did not carry out these experiments yourself?—No.

2626. They were not carried out in England?—They were carried out in Germany.

2627. (*Mr. Nunneley.*) With regard to your experiment to get the liquid from vesicles you would practically be on the watch for it?—Yes.

2628. Does not that continue to exude for several hours after the vesicle has broken?—Yes, but it is very much contaminated then; it is mixed with saliva from the mouth and dirt organisms.

2629. But I was thinking it is still very virulent when it comes out?—Oh, yes, it is still very virulent. I quite admit that you could get virus from the mouth even if there were no vesicles, but the quantity of virus that you can get is, from an experimental point of view, small. The great advantage of being able to cultivate an organism is that you can get as much of it as you require; you can get pints of it.

2630. Yes, but still in this case there is quite enough comes to poison other animals some time after?—Oh, yes. If expense imposed no restriction you could of course get plenty of foot-and-mouth disease virus from the vesicles.

2631. You were saying that you did not think breath would carry it much, but would not that carry the bacterium? For instance, you mentioned one case of the hay that had been in the loft; at any rate it is thought; in Denmark I think it was; that gave the disease to animals when it was given to them some months afterwards?—Yes.

2632. How do you suppose the virus got into that hay?—Well, I believe the distinction which I drew is perhaps from a practical point of view not of very great importance, but when a person or a man is breathing quietly, and not coughing or rasping, or anything like that, it is physically impossible for the breath, that is the gas coming from the lungs, to have any bacteria in it at all. And I believe that there is no evidence to show that the breath, as breath, is infective in any disease. But in practice one knows that the breath may have mucus, little particles of moisture from any part of the air passages, and it is possibly those that make it infective, but the practical distinction is not of much importance. I would admit that the breath is infective probably.

2633. I was thinking in that case you seemed to say that the hay became infected by being in a loft above diseased animals?—I should not like to draw any firm conclusion as to how that hay got infected. It is quite as likely it was saliva carried up by the boots of one of the attendants.

2634. In one of those cases you said it remained active

for 12 months, or it is supposed to have done, and you could hardly draw the line and say that is really the outside period it could live under favourable circumstances?—Oh, no, I should not.

2635. But still you do not think that it is possible in this Somerset outbreak that it could have lived in the soil for some 30 or 40 years?—It seems to me in the highest degree improbable.

2636. I must say I agree with you as regards that?—In trying to explain natural phenomena you may have several explanations each of which would fit, but I believe it is a safe rule in philosophy that when that is the case you should take the simple one, and it seems to me to be anything but simple and very little in keeping with what one knows in other cases to assume that the virus can live for 20 years outside the body.

2637. I understand that that soil is of a peaty sort of nature which does preserve things which are buried in it?—I should not attach any importance to that. I think I could get you scores of peaty farms on which foot-and-mouth disease occurred at one time and without any subsequent recurrence.

2638. And the same with an outbreak in Suffolk, I think it was, or Surrey, where they said the thatch of an old barn had been pulled off comparatively recently before the outbreak, and some people ascribed it to that, that the poison had been dormant in this thatch for 20 or 30 years. You would hardly think that possible?—I could not deny the possibility, but I attach no importance to it myself.

2639. You mentioned that the danger is greatest from the nearest countries. Well, I suppose it would be, but still practically would it not be almost as dangerous from Russia and Germany as from France and Belgium. I mean if it came in infected produce such as Russian oats or hay used as packing from Germany, the difference in the time of transit from Russia or Germany to England and from France or Belgium to England would be negligible?—No, I should have thought not.

2640. It is only two or three days difference?—I take it it would be more than that. It comes from the Belgian and Dutch ports; it is a matter of two or three days. Coming from Russia, I take it, it is a matter of two weeks, perhaps, and I must again point out that experience indicates that in the fields under natural conditions the virus soon dies out.

2641. In the fields?—In the fields.

2642. Yes; in the open air?—In the open air. We do not know that in ordinary circumstances it lives any longer when it is partly concealed; partly covered. I should have said it was obvious that the things that take longest to come to this country must be less dangerous, but I did not mean to suggest that there would be no danger in things coming from Russia.

2643. I thought you almost admitted that in these cases in Denmark it may very likely have lain dormant in the hay for some months?—Yes, twelve months.

2644-5. Well, if it lay dormant in the hay for some months could it not very well lie dormant in the hay while it comes from Russia, or in oats while they come from Russia?—It might, but I should like to point out in this connection that at the time foot-and-mouth disease had practically receded from the western part of the Continent we did not get outbreaks, whereas we know that foot-and-mouth disease is always existent in Russia, so that some importance is to be attached to the fact that it is when the disease is common on the nearer land on the Continent that we get most of our outbreaks. And in case I should not be asked specifically about the point, I might say now that in Professor Bang's opinion hay is not a dangerous commodity. He does not deny that hay may carry the virus, but he points out that if hay had been a common carrier they ought never to have been free from foot-and-mouth disease in Denmark in recent years because hay is very largely imported; imported all over Denmark.

2646. Imported from what countries?—From Germany, I understand. I think I am right in saying that; he at any rate expressly calls attention to the fact that a great deal of hay is imported into Denmark.

2647. But I suppose you will agree that our

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Edinburgh outbreak a few years ago was due to the hay?—Yes, I think the evidence pointed to that.

2648. So that hay does carry it sometimes at any rate?—Oh, yes.

2649. And you do not think that hay and straw used for packing are particularly dangerous?—I think they are not particularly dangerous.

2650. I have always rather suspected that because I know, as a matter of fact, in our inland towns the hay comes like that. It is thrown out into the yard for a day or two, and at last it is taken out to cattle, or taken out to the yards in which cattle come. I have always thought that it must be a more dangerous vehicle of conveyance than even hides, and so on, which do not as a rule go to living cattle?—Packing material goes all over the British Islands; it goes to Ireland and the Isle of Man, and Scotland, and it goes to Denmark, and it goes all over Denmark, and yet you have got to deal with the fact that nearly all the outbreaks have been on the land nearest to the country in which the disease was prevalent.

2651. Then you think it is more likely to be carried in the air in some way?—No.

2652. Or how do you think?—I have not made up my mind as to how it comes; it is not from want of thinking about it.

2653. And yet you seem to lay stress upon it breaking out in the counties nearest to the infected country?—I do lay stress on that; it seems to me to be an important fact which enables you to exclude pretty well some things.

2654. Yes, I follow you there?—But it does not enable you to put your finger upon the hundred other things that might bring it.

2655. Possibly it might be carried frequently by birds or something of that sort, which would naturally settle in the nearest counties?—Oh, yes, or the wind.

2656. In the air, I may say?—In the air. But I confess I have not been able to assimilate the wind theory.

2657. To turn to another point with regard to the instruction of veterinary surgeons, would it be of any use, do you think, if the Board of Agriculture were to send out, say, once in five or ten years, a short circular to all veterinary surgeons, and to publish it where stock-owners could see it, calling their attention to the scheduled diseases and the symptoms. I suppose all veterinary surgeons are taught the symptoms at college?—Oh, yes.

2658. That I take for granted; I take that as a matter of course. They would all learn it then, but in the course of years, 10, 20, or 30 years, they would naturally somewhat forget?—No, sir, I do not think they forget. I do not say that it would not be a good plan, and it might even be advisable to do it much oftener than you suggest, because the number of veterinary surgeons in practice in this country is probably only about 2,000, and it would be a very trifling expense to send them a circular. But I do not think the difficulty in diagnosis arises from their having forgotten, but because of the natural want of confidence which a man has in diagnosing a condition which he sees for the first time.

2659. I quite agree with you there, but with regard to the stock-owners, young farmers, it would be even more likely that they would not think of it?—That is so if they were to get no advice.

2660. If you were to send a circular of that sort every year or so it would come so much as a matter of course that veterinary surgeons receiving it would throw it aside saying, "Oh, that is what I got before." If it came once in 10 years he would take more notice of it?—If I were to offer any advice at all it would be, when you have the least doubt report the case as one of foot-and-mouth disease.

2661. That is one thing that I should urge?—It is a mistake to enter into refinements, and tell him how he has to distinguish exactly between foot-and-mouth disease and other things; he has already been told all that.

2662. You do not see any practical means of giving further information or instruction?—Yes, I think it is rather a good idea to send a circular to the whole of the members of the profession.

2663. And in case of large outbreaks, I think, as Mr. Stockman said the other day, that their staff would not be sufficient to cope with two or three or four large outbreaks at the same time, but would not the local veterinary surgeon acting with and under the regular staff be quite capable of assisting them?—Well, of course, if foot-and-mouth disease, so to speak, got away, it would then fall into line with the other contagious diseases, swine fever, glanders, sheep scab. The Board of Agriculture has not a staff to deal with these, and never could have a staff, and nobody, I think, who has given it consideration would advise that they should contemplate having a staff like that; it would become too unwieldy. I think if it ever gets away to such an extent that stamping out becomes impossible, then we will simply have to rely, as we did in the past, on the local veterinary surgeons and the local authorities.

2664. (Sir Bowen Bowen-Jones.) I think all the points I wanted further information about have been adverted to, but I must say I heard, Sir John, with great surprise, that you accept the correctness of the theory of vitality of Professor Bang's experiments as being correct?—Well, I am quite prepared to alter my opinion if anybody will show me a more probable explanation of the facts.

2665. Are there not several explanations to show that the result he has arrived at from his experiments is not a conclusive result?—They were not experiments; they were observations of natural occurrences, and I am in no way responsible for them, but I freely admit that at the moment I think that the interpretation which Professor Bang places on them is the most reasonable one.

2666. Is it not contrary to all the opinion and knowledge that the veterinary profession possessed before that the period of vitality should be so much prolonged?—It is not in the least contrary to previous knowledge; it may be said to extend previous knowledge. There are very few actual carefully-designed experiments to show how long the virus would last, and suppose that in these few experiments it had been found that the virus was alive in six months and dead in that particular sample in seven, that would not justify anybody in concluding that the virus could not live in other circumstances for eight.

2667. Well, if you take that line of argument you might go on *ad infinitum* that it would live for ever and ever?—I think it is a most valid argument.

2668. It is contrary to anything we have been told at this Committee before, or that I had ever heard of previously with regard to this disease?—Well, I might retort that if we adopted that attitude, every newly-discovered fact would have to be discarded because it is inconsistent with previous knowledge.

2669. Yes, but then can we not take some reasonable explanation such as that this disease was re-imported on to this farm that Professor Bang refers to?—Now I am quite willing to consider that, and of course it was one of the very first suggestions that would occur to anybody, but would it not have been an extraordinary thing that four re-importations of the disease into Denmark—at which time Denmark had no foot-and-mouth disease—should in each instance be on to a farm where there had been a previous outbreak. You see, you take an area here of say 10 farms, and only one of them had an outbreak last year. How does it come that the imported disease is taken to this farm that had it before, rather than to the nine round about that had none?

2670. May it not be a coincidence?—Well, it might be a coincidence in that case, but there were only four re-importations altogether, and it would be an extraordinary coincidence if in all four cases the virus happened to be taken to a farm where there was an outbreak the year before. It must be remembered that the great majority of the farms in Denmark had not the disease before, and these at any rate are the reasons why I prefer Professor Bang's explanation.

2671. I know Professor Bang is a very great authority, and I have a great regard and respect for anything he has set out, but it seems to me inexplicable, at least it seems so contrary to all other opinion we possessed before, that I really cannot accept it at once. Are there not other explanations, such as it lying dor-

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mant in one of these semi-immune animals, or apparently immune animals, and then being contracted and carried on to another semi-immune animal, and so on?—I really do not know what a semi-immune animal is.

2672. Well you said some of these animals had not taken it. I assume they had not taken it, and there was no visible symptom of them having the disease, but still they had it?—Well, that question is also dealt with by Professor Bang, and I mentioned it in my examination-in-chief. That view is indicated by the fact that the animals surviving from the previous outbreaks were left alive, and when these recurrences took place it was only the fresh importations and the animals born since the last outbreak that were killed. After that the farm was re-stocked again, and still these old immune animals were left. Now if they had been the cause of the recurrence there ought to have been a subsequent recurrence. The disease ought to have continued to appear for years.

2673. When was this assumed outbreak? When did it occur?—All these cases were in 1893, at which time there was no disease in Denmark elsewhere.

2674. If we are to accept the theory that vitality is extended to one year, are our regulations now, as carried out by the Board of Agriculture, at all adequate to deal with the prevention and suppression of this disease?—Certainly, experience shows that they are, because I tried to emphasise the fact that those occurrences are highly exceptional. Professor Bang himself called attention to the fact that there were 398 farms—I think that was the number—in this particular district in 1892, I think it was, that had the disease, but it only recurred in four.

2675. (Mr. Bathurst, M.P.) You are so extremely cautious that I am almost afraid to put any questions to you. I do not think that my colleagues, at any rate, have been able to derive very much information, or suggestion rather, from you as to the line they should take?—Well, sir, I may say that that is due to my ignorance and not to a desire to conceal anything from the Committee.

2676. I am sure of that. But with regard to Professor Bang, in the first place, you have great confidence in Professor Bang, I think?—Oh, yes.

2677. And he is one of the chief Continental authorities upon stock disease, is he not?—Yes.

2678. Are you entirely at one with Professor Bang in his opinion with regard to the nature and the communicability of foot-and-mouth disease?—I confess I do not know what his views are on these points.

2679. Then, with regard to the latency of the disease, do I understand that you do share his opinion that the disease may remain latent upon the same premises for, at any rate, 12 months?—Yes, I have quoted the observations and have already said that the interpretation which he put upon them appeared to me to be the most reasonable.

2680. You share that view?—I do.

2681. Is he himself of the opinion that the latency of the disease cannot continue longer than that period?—I do not remember that he has expressed any opinion with regard to that, but knowing him well, I feel quite sure that he will not have placed any limit to the period during which it might.

2682. May I ask you whether the other leading European observers and investigators share, what appears to be, the English expert view that the latency of this disease over a long period is impossible or unlikely?—Well, I did not know that there was any such distinction as between the English view and any other view.

2683. I am not suggesting there is. What is the English view? Well, so far as we have received evidence it certainly is to the effect that the disease has no very long period of latency?—Meaning by "long," how much?

2684. You have stretched it further than anything we have had so far. It has been suggested hitherto that it is unlikely that it continued longer than three or four months?—Yes, but probably the person who expressed that view will immediately change it when any case is brought to his knowledge, such as the Danish one.

2685. Sir John, what I really want to get at is this: I want you to tell me, because I know nothing about it, if you kindly will, with regard to the foreign experts

whose writing and pronouncements you have studied, at least I assume you have, is it their opinion or is it the opinion of many or most of them that this disease does remain latent for more than three or four or even 12 months?—I am afraid I cannot tell you. My own strong opinion is that in the great majority of cases it does not lie dormant for any such period as three or four months.

2686. You very properly pointed out the difference between the conditions on the Continent and the conditions here, and I think you drew attention to the fact that in this country, at any rate, there does not appear to have been a recrudescence of the disease in most cases upon premises that have been previously affected?—And that that is in keeping with general European experience.

2687. But then, on the Continent, this disease is much more continuous than it is here?—Where?

2688. Well, in many parts of the Continent?—I admit they have had a very bad outbreak during the last few years in Germany, but it is a mistake to imagine that it is continuously bad in Germany. Germany a few years ago was free from the disease.

2689. Yes; that is not quite what I want to get out? Is it in your opinion definitely proved that this recrudescence does not in fact occur either on the Continent or even in this country after long intervals?—You cannot prove or disprove a negative. You could not prove such a thing, but having regard to all the circumstances, I can only say that I consider it in the highest degree improbable that the virus could subsist in any natural circumstances outside the body for a period of years, and if you ask me why I point to the fact, which no authority will deny, that, as a rule, in natural circumstances it clearly dies out inside a month. There is abundant experience in this country—I can remember it myself—to show that it dies out within a month.

2690. Where it is exposed to light and air?—Yes, just in the fields; it would not all be exposed to light and air.

2691. You have committed yourself to the statement, with which in general I should entirely agree, that there are parasites which cannot live except upon their host. Is it not possible and is it not the fact that in many cases parasites live upon a variety of hosts? We will take the case of syphilis or even the case of malaria to which you referred; is it not conceivable that the same thing happens in foot-and-mouth disease?—No, I know no circumstance which suggests that there is any analogy in that connection, between foot-and-mouth disease and malaria.

2692. Yes, but what you have told us this afternoon rather indicates that there is scope for a large amount of inquiry and research upon this question of the latency and the continued virulence of this disease?—Yes, I have said that I think that a properly thought out and executed plan of experiments would extend knowledge with regard to these points.

2693. Well, Sir John, you have said that you approve of experimental inquiry, but in your précis you seem somewhat hopeless as to the result of such inquiry. Well, may I ask you what sort of inquiry you would favour, what sort of experimental inquiry you would favour?—I have not said I am strongly in favour of any sort of inquiry, and I think my opinion on that point, if it requires amplification, could perhaps be better brought out if you will read my précis and then cross-examine me. I say that anyone who recommends an inquiry ought to be able to specify the point on which he desires information, and then to show that an experimental study of the disease would probably provide this. Well, I am quite prepared to answer if you will tell me what is the particular point on which further knowledge is required. Then I will say whether an investigation would probably bring it to light.

2694. I think it has already been put in a question to you, but I should like it perfectly clear from you, are there no lines of research or investigation that you yourself consider desirable in order to advance knowledge of foot-and-mouth disease?—Certainly, I should be in favour of investigating foot-and-mouth disease to extend knowledge in many directions, although I admit that probably some of those might have no immediate bear-

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ing on the difficulties which this Committee have got to deal with. For instance, I should like to determine, as far as it could be determined, what is the vitality of the virus outside the body in different circumstances. I should like to try to cultivate the virus; I should like to test further what is the susceptibility of horses and birds, and small rodents.

2695. Insects?—Yes, and things like that, and many other things that I need not trouble you with.

2696. That is really what I wanted to obtain from you. Well now, the matter upon which some of us would like, if possible, to see further investigation and research, naturally is the means of conveyance of this disease from a known infected quarter to our own livestock?—Yes.

2697. Can you conceive any way of carrying out investigation or research along those lines?—You mean by investigation to try to discover precisely how the virus is coming in or has come in recently?

2698. Quite so?—I am absolutely at a loss to imagine how you are to be helped in that by any amount, by any possible amount of experimentation. I am at a loss to imagine how you are going to get information on that by experiment.

2699. You have told us that this germ is ultra-microscopic?—Yes.

2700. How is it possible to trace the source of any disease that is ultra-microscopic?—Well to trace—

2701. Yes?—To trace the contagion of a disease throughout nature may be generally impossible whether it is microscopic or not, but I may say that you can prove whether any selected material has got the virus of foot-and-mouth disease or not by inoculation into a susceptible animal, and by no other means.

2702. That is just what I wanted to know. You lay stress upon inoculation. I am rather sorry you have done that, because I suggest that ingestion is rather a more important means?—I beg your pardon, I used the word "inoculation" for "infection." I need hardly say that there can be no difference of opinion between you and me as to the possibility of infection by ingestion.

2703. I think you would agree, in spite of what has been done in another direction in regard to swine fever, that ingestion in most cases is a much better test than inoculation into the blood?—Oh, no, I should strongly disagree with you about that.

2704. You would?—Yes, I thought you meant that infection by ingestion is a practicable and the common method, but I think there is no doubt that infection by injection of the virus into the veins is by far the most certain method.

2705. We will agree to differ?—We will agree to differ.

2706. What I want to get at is, of course, this; let me illustrate my point by referring to the Edinburgh outbreak. You share the view that that outbreak was probably due to infected hay or straw?—Yes.

2707. It would have been impossible, as you admit, by putting anything under the microscope at that time to discover the germs of the disease?—Yes.

2708. Then surely the only possible means of discovering the origin of the disease would have been to feed that hay or straw, as the case may be, to a sound animal and watch the result?—Well, if you say to a hundred sound animals, if it will go round among them, I will agree.

2709. Suppose we say 20 to 30 sound animals?—Very well; I would agree that that would have been the most practicable method of attempting to prove whether the hay in question contained the virus of foot-and-mouth disease.

2710. Quite so. Well, now, is there any reason why that process cannot, with reasonable safety, be carried out with all due precaution upon an island off the coast of this country?—I am afraid I do not understand. Do you mean to infect forage intentionally, and then test it afterwards.

2711. No?—To select various imported articles and test them?

2712. To select articles found upon infective premises that are known to have come from highly-infected countries and feed these articles to sound animals under

proper precautions?—Do I think it would involve much risk?

2713. Well, first of all, I want to know whether, in your opinion, you consider it would be advisable?—No, I do not.

2714. You do not?—I do not.

2715. But you have already admitted that in the case, for instance, of the Edinburgh outbreak it would have been the best and most natural way, apart from the question of safety, of discovering the origin of the disease?—Certainly, I admit that. Might I adopt the Scotch method of answering by putting another question? You must also contemplate the possibility that your experiment might fail. What conclusion is to be drawn then?

2716. Well, surely, Sir John, there is always the very serious possibility ever present to the mind of the scientific experimenter that the experiment may fail?—Yes.

2717. But if the amount of good that ultimately results, so far as immunity from disease is concerned, is the preponderating consideration, it may yet be justifiable to make the experiment?—Yes; but if there was anybody strongly contesting the possibility of hay bringing in the disease, I should think it would be very important.

2718. Is it not, to your mind, a little unsatisfactory that when these outbreaks occur in this country, which, as you have pointed out, has a sea frontier, we should be wholly unaware of what the source of each outbreak is?—I admit it is very unsatisfactory.

2719. Therefore, any steps that we might in reason take which would enable us to find out the source of disease might be worth taking if the alternative might prove to be a widely-spread diseased area, and possibly a recurrence of the epidemic of 30 years ago?—Yes. I am not quite clear how any result of this experimental testing of food-stuffs is going to diminish the risk of the reintroduction of the disease. In the first place, if the testing is to be of any value, you are going to create a focus of infection, I take it, somewhat nearer than Belgium or Holland.

2720. Well, of course, that has been pointed out to us as the objection, and that is just the matter upon which I should very much like to have your opinion as to whether the fact that you are creating an experimental station for the purpose of disease outside the country altogether under proper precautions, would be a serious or even appreciable risk to the stock-owners of this country?—I think it would not be a serious risk, except, as was pointed out, it would very likely be seized upon by foreign countries as a ground for excluding animals from this country as long as these experiments continued.

2721. The great objection would, in fact, be the prejudice, the very natural prejudice, of foreigners?—I do not know that it is prejudice. We should call it prejudice when they entertained the opinion and sound-reasoned judgment when it was ours. We would act so, I believe, with regard to Germany or France at any rate.

2722. Yes; but, in your opinion, it would not be a serious risk?—It would not be a serious risk; no.

2723. Well, now, I just want to ask you something about protective inoculation, because apparently two eminent Germans have been conducting experiments with regard to protective inoculation, Messrs. Lœffler and Frosch, which, in your opinion, would not be work which would be of advantage if conducted in this country, I think you said to one of my colleagues?—No; you have misunderstood me.

2724. (*Mr. Morrison.*) I think you made that statement to me, that it was work that had no bearing upon the disease as it occurred in our country. That was the impression I took?—I think I must have been misunderstood. What I expressly said was, that an experimental investigation probably would bring to light improvements with regard to protective inoculation, and that these would, at the present moment, be of much more interest to the countries in which the disease is rampant than to this one. The problem in this country is not how to deal with foot-and-mouth disease, otherwise than simply to prevent its introduction.

22 February 1912.] Professor Sir JOHN MCFADYEN, LL.D., C.M., M.B., B.Sc., M.R.C.V.S. [Continued.]

2725. (*Mr. Bathurst, M.P.*) Well, admitting that, Sir John, it is conceivable, is it not, that if we could find an immunising serum or an immunising virus—I do not know what the proper term is—it might be useful to stock-owners in this country, particularly to owners of valuable pedigree stock, to make use of that as a protection against the disease coming into their herds?—An immunising serum has been discovered.

2726. It has?—It has. You will find it in the papers by those two gentlemen, if you happen to have a recent one.

2727. Is it a certain preventive against the disease?—Yes; given in a considerable dose it is a very reliable preventive for a period of about a fortnight, I think.

2728. Only a fortnight?—No serum gives protection for longer than a month; no serum gives protection against disease for longer than a month, and, as a rule, the protection is only for about from two to three weeks.

2729. But that would not apply, say, to the human diseases, such as small-pox or diphtheria, would it?—They do not use any serum against small-pox; against diphtheria they do. Diphtheria serum only confers protection for a few weeks.

2730. That is so?—That is so.

2731. And that would apply also—I think you use something of the same sort—to symptomatic anthrax?—That applies to that also and anthrax.

2732. And mallein?—No, mallein is not a serum.

2733. Has anything in the nature of mallein, for instance, been yet produced which would be useful in cases of foot-and-mouth disease?—No, that might be possible after we have ascertained the method of cultivating the thing outside the body. Mallein is a product of the cultivated bacillus; tuberculin is, and so on. Nothing of that kind can be obtained until you know how to cultivate the thing freely in artificial media. But I may say it is not required in the case of foot-and-mouth disease. Foot-and-mouth disease is not a long, latent disease like glanders and tuberculosis, in which you want a refined test.

2734. Well, that may have yet to be proved. I mean, that is your strong opinion, I see, but it is conceivable that it may be latent much longer than any of us have any notion to-day. However, I do not want to press you on that; you have given your opinion?—Yes.

2735. But what troubles me most about your evidence is the way that you despair, as I read it, of the useful effect of research and higher experiment?—No; you must not, sir, put my evidence in that way. I have not despaired of useful results from a properly thought-out and executed plan of research into foot-and-mouth disease, but naturally I assume that what this Committee particularly wants to know is, how the virus comes into this country. I am bound to be straightforward and tell you my candid opinion, that I do not see how an experimental inquiry is going to help you very much in that regard. I say that you may, by proper experimentation show that, as a rule, the virus dies outside the body in a few months, or you may find that it has to be extended to a few years, but I do not see that that will lighten your difficulties as a Committee in the least.

2736. In fact, it comes to this, that you do not see how we can make any useful report upon the reference which has been made to us?—That is just about it. I think there never was a Committee that had as difficult a task committed to it as you.

2737. (*Mr. Field, M.P.*) I think the Committee are inclined to agree with you in that. I do not know what the rest of them think, but that is my opinion?—I thought, sir, I was being badgered to give an opposite opinion.

2738. (*Mr. Bathurst, M.P.*) I am bound to say I thought, throughout the whole of your evidence, that that was your opinion; I am not surprised that you so express it. With regard to disinfection, suggestions have been made as to the desirability of disinfecting, or at any rate thoroughly cleansing the holds of ships in which both grain and at other times hides and skins are carried?—Yes.

2739. Do you consider that disinfection would be desirable?—Eminently desirable provided it does not entail

an expense out of all proportion to the risk which we appear to be running.

2740. Would thorough disinfection, by a suitable disinfecting agent, in your opinion, entail such an expense?—It is not the cost of the chemical substance, I am thinking about the mere trouble of cleansing and washing, and so on, even though there was no disinfectant in it. I do not know, it may involve indirect loss, such as delaying re-loading the ship, and so on. My opinion about that is really of very little value, but I agree that it is desirable, not only on account of foot-and-mouth disease, but on account of the danger of anthrax, to have ships disinfected as thoroughly as is practicable.

2741. Well, let us take anthrax and foot-and-mouth disease for this purpose together; what in your opinion is the best disinfecting agent for this purpose which might conceivably be used? I say conceivably be used, because, of course, I do not wish you to refer to any very expensive agents which would not, under any circumstances, be used?—Well, I think it would be advisable to keep the two things apart, because, unfortunately, we know that the spores of anthrax are about the most resistant germs that we are acquainted with, and I really could not say what would be the best to employ. One knows that for spores, and things like that, we employ very strong, highly poisonous disinfectants, such as mercuric chloride, which probably could not be employed in a ship.

2742. Well, that would not be suitable in this case?—No. I was going to say that there is not the least reason to think that in that respect the virus of foot-and-mouth disease is very resistant. I imagine any common disinfectant at all, if freely used, would be sufficient.

2743. Ten per cent. of carbolic acid?—You cannot make ten per cent. of carbolic acid in water; five per cent. is the maximum strength you can get it, and that would be quite enough; in fact, quite unnecessarily strong; I should say two per cent. would be enough.

2744. Two per cent?—Yes.

2745. If the holds of such ships were sprayed with two per cent of carbolic acid, would that be an effectual disinfectant for this purpose?—For foot-and-mouth disease?

2746. Yes?—Oh, I am quite sure of it, with cleansing.

2747. With regard to the post-graduate course at the college, to which reference has been made, do you not consider that it would be desirable for all those who become inspectors of the local authorities for the purposes of the Diseases of Animals Acts, to have gone through necessarily such a post-graduate course?—Yes, I think it would be very desirable, but it is scarcely practicable to insist upon it.

2748. (*Mr. Field, M.P.*) Why?—Because the great majority of the men who are now doing the work are too old. They are too old, and one knows the saying, that you cannot teach an old dog new tricks. But, over and above that, you cannot bring these men away from their existing practices to take post-graduate courses. But, in the case of the new men, I think it would be very desirable to insist upon it.

2749. (*Mr. Bathurst, M.P.*) I had in my mind the young student who has taken his degree. He would, with a view to getting ultimately one of these inspectorships, remain on and take a post-graduate course?—Is this an inspectorship under the local authority or under the Board?

2750. I mean under the local authority, of course, necessarily under the Board. Under the local authority as well as under the Board?—What I can foresee as a difficulty in that connection is that, of course, there are more qualifications than one that are desirable in a veterinary inspector, one being experience, and the young fellow who had just taken a post-graduate course would probably hardly have his application considered as against a local man who had been in practice for 15 years; but one must make a beginning.

2751. Do you think there would be any hardship involved in making it a condition precedent to the application for such a post under the local authority, that the applicant should have taken a post-graduate course?

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—No; I think it would be a very good thing, and in particular, in the case of any full-time appointments that may be created in the future, I think it should be insisted upon.

2752. (*Sir Charles Rose, M.P.*) Only one question. In spite of your inability to say how and in what manner the disease comes into this country, I think I understood you to say that, with the present organisation ready to pounce down upon any outbreak that may occur in this country, there is very little danger of any serious outbreak?—Experience appears to prove that up to the hilt, sir.

2753. (*Mr. Field, M.P.*) Just one question, Mr. Chairman. Is it a fact that, at present on the Continent where these serious outbreaks take place, they do not slaughter cattle in the same way as we do?—I must, in the first place, point out that we did not always slaughter the cattle.

2754. I know that, because I remember the former outbreaks?—And that we might very soon again have to give up slaughtering cattle. But what I said—and I believe it to be true of all these countries—is that when they have become free then they attempt to prevent the

reintroduction of the disease afterwards by dealing with the outbreaks by slaughter. But in Germany, for instance, the disease very soon got absolutely out of hand. There is one interesting fact mentioned in Professor Bang's paper touching this question, and that is, that in 1901, in Denmark, they had one outbreak, and from that until February 1904 they were free from the disease. In this outbreak the whole of the stock was slaughtered. This was a reintroduction of the disease. But, nine days afterwards, the disease appeared on a neighbouring farm, and the then Minister of Agriculture refused to sanction slaughter. The result was that the disease extended, and they had the disease to deal with on 20 other farms. That just shows that one cannot pretend that this country is definitely committed to the policy of stamping out by slaughter.

2755. In the 1901 outbreak were the cattle all slaughtered?—I really cannot charge my memory with that. In some of the outbreaks I am aware that they were successfully dealt with by isolation in this country.

2756. (*Chairman.*) Thank you very much. It has been very interesting evidence, but I am afraid it has not carried us very much farther?—I am afraid not.

The Witness withdrew.

Friday, 23rd February 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (*Chairman*), presiding.

Sir CHARLES D. ROSE, Bart., M.P.
Sir HARRY VERNEY, Bart., M.P.
Sir J. BOWEN BOWEN-JONES, Bart.
Mr. CHARLES BATHURST, M.P.
Mr. WILLIAM FIELD, M.P.
Mr. JOHN HINDS, M.P.

Mr. GEORGE R. LANE-FOX, M.P.
Mr. RICHARDSON CARR.
Major A. MARTEN DUNNE.
Mr. E. E. MORRISON.
Mr. E. M. NUNNELEY.

Mr. W. H. F. LANDON (*Secretary*).

Professor JOHN PENBERTHY, F.R.C.V.S., late Professor of Veterinary Medicine in the Royal Veterinary College, ex-President of the Royal College of Veterinary Surgeons, called in and examined.

2757. (*Chairman.*) Professor Penberthy, you have come here to kindly give us evidence on behalf of the Central and Associated Chamber of Agriculture, I think?—Yes.

2758. And on behalf of the Bath and West of England Association?—And at the invitation of the Committee.

2759. You have given us a short précis of what you propose to bring before the Committee, and, therefore, I think it would be the best thing if you would kindly give us that evidence in your own way, and then the members of the Committee can examine you on that afterwards. I think that would be the best thing?—Could Mr. Landon supply me with a copy of that? I may say, sir, that that was a letter written in pencil in the train very hurriedly.

2760. Yes, I saw it?—Well, sir, I think in the first place we have to recognise that foot-and-mouth disease is a purely contagious disease: that it does not arise spontaneously, and that every case of foot-and-mouth disease must be attributed to a pre-existing case of the disease. It is caused by a virus whose physical characters have not been demonstrated, is too small to be seen with any microscope at present at our disposal, and is classed with the ultra-microscopic viruses. It passes through the ordinary filter, but I understand it is arrested by the finer filter, known as Kitasato's filter. On this point I do not speak from the result of my own observations, but from a report, I think, of the Berlin Commission of 1897. If that is so, of course it is just within the range of possibilities that this virus may yet be brought into view. Most of the viruses which have not been brought into view, I believe, are so small that they pass through this finer filter. I do not know that that is very important from our point of view. This virus is contained in the vesicle or bleb, which is charac-

teristic of the disease, and when this bleb, which is most commonly in the mouth or about the feet, bursts the infected matter is largely discharged into the outer world. So that there is no question about the saliva being infective, and, of course, anything that becomes contaminated with it is also infective. Animals themselves, that is to say their coats, etc., may become infected in that manner, but I do not think it is possible to enumerate the materials which may become infected. The milk, if not always, sometimes contains virus, as do the faeces, and most other discharges. It is usually considered that the expired air sometimes contains the virus. Of that I have no proof to bring before you. The animals in which the disease is most commonly observed in Great Britain are cattle, pigs, and sheep. I have myself personally witnessed it in deer. It is said also to affect men, but I might preface my evidence by saying that my experience with foot-and-mouth disease began as an inspector of the Privy Council in 1881, and I have had a somewhat extensive personal acquaintance with the disease. As an inspector my principal duties were at Deptford and Thames Haven, where foreign animals were landed, and beyond that I saw a great deal of the disease in London and different parts of England. As far as man is concerned, I may say I have never had the remotest evidence of men contracting foot-and-mouth disease naturally from association with animals affected. I do not suggest that man is not susceptible, but if so the chances of his contracting the disease must be extremely small. Horses are also said to be susceptible. I happened to see a report last week in one of the professional journals of an outbreak amongst foals. Personally I have never seen a horse with foot-and-mouth disease, or anything suggestive of it. It may be important for me to state that as far as I know none of the smaller animals which are generally used in

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[Continued.]

the laboratory for experimental purposes are susceptible to the disease under natural conditions. I say that because I have never heard of any of the smaller animals having contracted the disease, and those which were experimented upon by the Berlin Commission in 1897 failed to yield any evidence of being affected. That, of course, makes it very difficult, or makes it more difficult, to carry on experiments with this disease than with others in which smaller animals can be used. I am afraid, sir, I may be reiterating a lot of elementary matters, or matters which are now elementary to you and perhaps unnecessarily occupying the time of the Committee.

2761. No, Professor Penberthy, we want to get at what is in your mind as regards this disease and then we shall be able to examine you afterwards upon it. That is the chief thing; we want to get at what is in your mind. You have had great experience?—The contagion may be communicated directly from the infected to the healthy or indirectly by almost any conceivable medium which has not a destructive effect on the virus itself. I should not expect sulphuric acid, for instance, to communicate the contagion because it would kill the virus, but I know no medium such as I was referring to which is not quite capable of conveying this virus. I believe as compared with some other diseases the discharge of the virus of foot-and-mouth disease to the outer world is very profuse. There is a comparatively large quantity of the virus discharged from the affected animals. And then a very minute quantity of this virus is capable of giving rise to the disease in susceptible animals. I quoted in my letter, I think, the result of some experiments which were carried out by Nocard in 1902, in which some matter from vesicles was diluted with 10,000 parts of water and the diluted material then in small quantities was quite sufficient to give rise to foot-and-mouth disease in the susceptible animal. Of course, taking into account a profuse discharge and the fact of an extremely minute quantity of the virus being sufficient to produce the disease one realises how easy it is for it to spread as rapidly as it does. From the terms of the reference to this Committee I gather that information is desired as to recent outbreaks of foot-and-mouth disease and any means which can be adopted to avoid the recurrence of such.

2762. Quite so?—As regards the actual outbreaks themselves I cannot claim any special knowledge of the circumstances surrounding them, because I have not been engaged in any way in investigating the matters or in dealing with them. I, however, think we may take it that inasmuch as the landing of animals for distribution throughout the country or otherwise than for killing at the place of landing, and the landing of animals coming from countries in which foot-and-mouth disease exists is prohibited, the main consideration is the virus after it is discharged from the affected animal, that is to say I do not see any room for fearing that the virus is brought to Great Britain in the live animal. Therefore the principal point for consideration is the virus after it has left the animal. A very important matter in this connection is the vitality of that virus and the period for which the virus retains its power to infect after it has left the animal. I cannot say that the knowledge on this point at present at our disposal is very complete or very satisfactory. Of course, it is always difficult to measure this period exactly, that is to say the period for which the virus retains its vitality under ordinary conditions, because we cannot always imitate in the laboratory the conditions to which animals are ordinarily subject. But notwithstanding that I think we could arrive at an approximate position, and experiments which have been carried out clearly prove that this power to infect is retained sufficiently long to allow of its being imported into this country, certainly from any European country, and in my opinion from any other Continent. No doubt you have had evidence before you as to experiments on this point, but the Berlin Commission found that it kept in an ice-house for several weeks, from 9–16 I believe. The French Government arrived at the conclusion that it remained effective in cow-sheds more than six weeks, and I am afraid we are not in a position to say that it may not live rather longer than that. It dies comparatively soon, or loses its power

to infect, which is perhaps better, very soon after it is submitted to high temperatures and to drying processes generally. Desiccation has a very detrimental effect upon the vitality of the virus. Putrefaction has too, and, what is perhaps more important, sunlight. It dies in a comparatively short period if a thin layer is exposed to sunlight. It retains its vitality longer, as one would expect, in damp substances, moist substances, than in dry. I say in this short précis that I think it would be useless to attempt to name all the media which might possibly convey the virus of foot-and-mouth disease from place to place, or from country to country. The probability of any article becoming a medium I presume would to a certain extent be measured by the probabilities of its having come from places where outbreaks have occurred, or having had the opportunity of being contaminated by material from such places. Consequently hay, straw, grain, milk, hides and trotters, calves in their skins, indeed, farm products generally, must take a high position, I think. I have made a note that Fröhner, a well-known German writer whose works have been translated into almost every language, reports an instance in which foot-and-mouth disease was traced to butter. That, of course, is within the range of possibilities. We import something like 400,000,000 lb. of butter into Great Britain every year, and I expect we may import a great deal from countries in which foot-and-mouth disease is existent. One has heard a great deal about birds communicating it, but I think, beyond the assumption or suggestion in Denmark of crows having brought it across from Germany to Denmark, there is no specific evidence on the point. If a bird alights on some material contaminated with foot-and-mouth disease in France and flies over to England, of course it is quite possible that it would deposit the virus here and that a susceptible animal should obtain it, contract the disease, and initiate an outbreak. It was very commonly thought, twenty-five or thirty years ago, that it was air-borne, that is to say, it was blown across the Continent on to the Eastern Counties. Well, I do not know, but I suppose if the outbreaks were analysed, we get a larger proportion of foot-and-mouth disease in the Eastern Counties than in those counties distant from the eastern shores; but I think the Committee will see that there is another factor probably in operation here, the material communication. Most of the media coming from the Continent pass to and through the Eastern Counties, so I do not think there is any very strong evidence of the disease being purely air-borne. It is, of course, quite possible that it could be borne in the air certain distances, because one has seen the slaver being blown considerable distances in the field. Then again, as regards tracing the origin of any outbreak in this country now, the difficulty is much intensified owing to the fact that the medium originally contaminated or bearing the virus, may contaminate another medium. It does not at all follow because an outbreak of foot-and-mouth disease occurs at Bridgwater that the virus was directly brought to Bridgwater in some medium which started, we will say, in Holland, where there was an outbreak of foot-and-mouth disease. I think I instanced man in my précis. It is quite easy to see how a person from Holland might get into a train at Harwich and in a compartment with four or five people rub shoulders and toes, and leave some dirt from his boots, by which means another traveller, who had never left England, might become contaminated, and going to Bridgwater or anywhere else, might become the starting-point of an outbreak of disease there. I have endeavoured to get figures showing the number of outbreaks in the different Continental countries during the past thirty or forty years, and I regret to say I have been unsuccessful. I think such information as they could supply might possibly give some indication as to conditions of the prevalence of the disease in foreign countries under which we are more likely to get it here. Of course, I think it would appeal to one's common sense to suppose that when countries having a sea-board opposite to our own are infested with the disease, we are more likely to get it than if it were farther off in a country where there was no sea-board and where the intercourse was less common than under other circumstances. It is rather a re-

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[Continued.]

markable fact that the disease was extremely prevalent in Germany during that period which we were absolutely free, that is to say, from 1886 to 1891. There were as many as 816,000 in 1890, 820,000 outbreaks in Germany in 1891 and 1899, to one in Great Britain for six years. I cannot discover whether the disease was existing in France or Denmark—Denmark not, I think,—then, or any of those countries whose shores are opposite our own. But in 1892 the numbers, as far as I could gather them in Germany, got to be millions; I have figures of 4,100,000. I cannot vouch for the accuracy of those figures; I have no reason to suppose that they are wrong, but I should not like them put down against my name as bearing out any specific statement. Then, of course, the disease did spread more generally, and we had 95 outbreaks in 1892. I think those outbreaks were supposed to be due to Danish cattle brought to Islington.

2763. What year are you talking of?—1892. Then Denmark was free and had been free for two or three years, I think, of foot-and-mouth disease. Well, with what I know about the disease I am forced to the opinion that no measures can be adopted which would afford absolute security to this country while disease is prevalent on the Continent. As far as my limited vision goes it would be impossible to close all the channels through which infection might possibly invade our shores, but I think that as measures for suppression and eradication of the disease in Continental and other foreign countries are adopted our security will be enhanced. I think the sooner some attempt to bring that about is made the better it will be for all countries. I have for a long time thought that with such matters, usually the effect is universal almost, it is time for international consultation. The time has now arrived when the matter can be discussed on a scientific basis, and there should be no desire for isolation. It is a matter for united action. We cannot get absolute security until the other countries are free from the disease. There is no doubt we appear at the present moment to stand to gain, because we have got rid of it ourselves and we have only to keep it out, but in having done so we have conferred benefits on other countries in intercourse with us. Of course it is not for me to say that this is possible or practicable, or to say how it shall be done, but, broadly speaking, I think that is the way this matter will have to be approached if we are to obtain absolute security. We have at any rate given them the proof that we can control the disease. Of course I recognise the advantages we enjoy from our insular position, but if our methods were adopted I do not see that the same result is unattainable elsewhere. We shall, I venture to hope, come to the time when foot-and-mouth disease is so small in Continental countries, that we shall be able to act together and limit the extent of outbreaks, and consequently their seriousness. I think we now have been taught a lesson too, so that an outbreak in Great Britain has lost its real seriousness while the action that has been adopted recently and has been so successful is absolutely adhered to, and the sooner we can get foreign countries to realise the fact and imitate our methods the better it will be for all, and particularly that important branch of our trade, the export trade of pedigree stock. I think they are much more likely to be convinced if they are consulted with than if we are constantly putting checking orders. In consultation I realise the difficulty that *tu quoque* will be advanced, but I must leave that to diplomats. I do not suggest that any further risks of importing the virus into this country should be taken, but the fact of our freedom from the disease must be a very valuable asset of security to all countries in close intercourse with us. I think it is desirable that the Board of Agriculture should be in the closest possible communication with the Consular service abroad, and that the earliest information possible should be obtained. I do not say it is possible always to obtain very early information, nor have I the slightest reason for doubting that that process does not obtain now. There is one thing I rather omitted, I think, to say about the nature of the disease. I said just now that my actual experience was 25 to 30 years ago. Even in those days we had the idea that the virus did not retain

its vitality any considerable length of time outside the animal body. I think I have said that it is now accepted that it does live a considerable time. I think I gave some idea of what I thought about that. But I intended to say the affected animal itself is believed not to retain the power of communicating the disease very long after recovery. The French inquiry indicated they were free after 14 days. I think it would be dangerous to accept that, because they must be possible media conveying the contagion; the contagion may rest in their coats and slip between their claws after discharge of virus has ceased; but as a matter of fact our experience 25 years ago told us that after three or four weeks it proved safe for the recovered animals to mix with the healthy ones. It is perhaps important to realise or to get information on the point as to how long the virus remains in the body before distinctive symptoms of the disease are manifested. This is short. It has been approximately measured. I cannot say the outside limit has been ascertained; that is always a difficulty. But I have never met with any circumstances which suggest that it is carried in the susceptible animal's body any length of time to break out some time afterwards. I have had it brought very vividly to my notice that the result of an outbreak of foot-and-mouth disease in Great Britain leads to the prohibition against landing our cattle in foreign countries, and although I have elaborated no scheme, it has occurred to me that if we met foreign countries in the spirit that I suggested just now, some form of quarantine on this side might possibly satisfy them, as it would give absolute security against importation of affected animals from this country. That is to say, if an animal which was to be transported to South America were kept in quarantine at the place of embarkation for a certain comparatively short time, that it would be safe for a foreign country to import that animal. I think it is six months usually now, sometimes shorter with some countries who want our animals very much, but much depends on that, I expect. I think that time might be materially shortened. I do not know the number of animals which are exported nor how costly this process might be, providing the quarantine stations, but at present I see no reason why the tuberculin test could not be carried out at the same time. I think, sir, I have touched on most of the points which I have remarked on in my letter.

2764. Well, Professor Penberthy, one of the chief things, one of the important things that this Committee want to find out, you have already alluded to in your evidence. You have told us that the time the virus can remain in the animal itself is short; I gathered you said that?—That is my experience. I have never had any reason to suppose any other, sir.

2765. And we have had evidence about how long the virus will last outside. Now, in your opinion would it last a month?—Yes.

2766. Would it last six months?—I cannot go to that limit, sir; I have no information. I know it was stated in the 1899 report of the Board of Agriculture that the expert advisers of the French Government held the view that virulence may be retained for several months.

2767. It is an important thing to find that out if we can?—If you can imitate natural circumstances it would only be approximately easy, though the necessary experiments would probably involve a prolonged period.

2768. You would say anyhow, I presume, that the virus could not last 12 months?—I could not say that, sir, no.

2769. You would not like to say?—Because I do not know, sir; no, I think it is most desirable if that knowledge can be obtained that it should be.

2770. That brings me to the point in your evidence in which you say, notwithstanding many announcements of its discovery, the virus has not yet been satisfactorily demonstrated. Then I take it you would advocate and you would think it advisable, knowing that there is a good deal more to be found out about the disease, that further facilities should be given for research upon this subject of foot-and-mouth disease just the same as some other diseases?—I do not think we have come to the limit of our knowledge, and it is always

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desirable to get as much knowledge as possible. The greater and more intimate knowledge you have of the virus the more likely you are to suggest effective measures for the interception of it in its action.

2771. And you think if further facilities were given the veterinary profession would be able to find out a great deal more about this disease?—I think we might be more definite about it. Of course we can work with more confidence when there are defined lines to work between, and suggest and apply measures with greater assurance when we know. I think I may say yes to your question.

2772. There has been a certain amount of uncertainty about the length of time of this virus lasting. Do you think the regulations of our own Board of Agriculture are sufficient?—I think they are as far as we can go with our present knowledge.

2773. I gather also that owing to the enormous amount of disease there is on the Continent, in your opinion we are always liable as long as that goes on to outbreaks in this country?—Yes, that is my opinion.

2774. Always?—Always.

2775. And especially to come through one district; through the eastern counties or on that border mostly?—I think so.

2776. You have spoken on a question which has been asked of several witnesses about some consultation with foreign countries as regards common action with regard to this disease?—Yes.

2777. And you yourself would welcome that consultation?—I should, yes.

2778. You are aware, of course, naturally you are aware that this question has been brought up at your different Veterinary Congresses for the last 20 years?—Yes.

2779. And nothing, as far as we know, no agreement has been come to about it, about taking any action?—No agreement on the part of the Governments has been come to.

2780. But has there been as regards the veterinary profession in all countries?—Well, I do not know that the veterinary profession has arrived at a unanimous opinion on international dealing with the disease.

2781. But they have considered the matter at these congresses?—They have considered the matter, and I believe they are fully agreed on this point, and the nature of the disease as far as it is understood on which international action should be based. That is rather for the veterinary profession than for the suggestion of the measures.

2782. I quite agree that if common action could be taken between us and the Continent of Europe, it would be a most excellent thing, but I would ask you—which I think you had in your mind when you spoke of a *tu quoque*—would not foreign countries, naturally, supposing they undertook, and undertook successfully, to carry out the same regulations as we do and to stamp out foot-and-mouth disease on the Continent, ask us possibly to give them something in return?—I think it is highly probable, sir.

2783. That is the importation of their animals into our country?—Well, I should expect they would.

2784. You are not, from your past experience, in favour of foreign animals being landed in this country?—No, I am certainly, absolutely vehemently opposed to it, always have been, and always shall be while the risk of importing serious contagious disease exist. I would not admit that that is the only bargain which could be made. I should not like to say that a bargain could not be made short of the importation of foreign animals. Animals are not excluded from Great Britain on account of foot-and-mouth disease only.

2785. No; but what else is there that they might ask us to do which is in your mind?—They are sure to ask to have their animals admitted. I do not think they could at present ask any greater price from us.

2786. Well, I am afraid from what you have said that you would think it very unwise on our part to alter in any shape or form the present regulations?—Most, until we were absolutely assured—I do not know that even we set up prohibitions as finality itself—when we are assured that in Continental countries all disease has been exterminated, free trade may come in cattle everywhere, I mean.

2787. Do you think that happy day will ever come?—I am afraid I shall not live to see it. At any rate, I think the United Kingdom is now, and in the future is likely to be, in the position to give a better guarantee of freedom from danger than any other exporting country.

2788. You mentioned in your evidence about early notification to the Board of Agriculture from our Consular Departments abroad being necessary. My own impression is that those notifications are given by the consuls?—I do not know what their instructions are. I have been given to understand that the majority of consuls really think it does not come within their province; or may be have not digested that part of their instructions. But I hope that special means are now adopted for impressing on them the importance of prompt collection and transmission of information.

2789. Well, now, going to another part of the subject, you have alluded to certain of these imports which might possibly be the means of bringing disease into this country. We have had evidence of the late outbreaks last year, in 1911, and we have not been able up to this moment to trace the origin of those diseases to any of those imports. In your opinion, would any good be done by the disinfection of hides?—I think it is most desirable, if it is practicable, from more than one point of view.

2790. At the port of embarkation?—Yes, and, under certain circumstances, at the port of debarkation too. Both on that side and on this. If there is any chance of their being contaminated by any other cargo they should be done on this side again. But, of course, if they are done on the other side, they save the cargo from contamination—the rest of the cargo.

2791. Take, for instance, the one particular thing, hides; supposing we made some regulation about disinfecting those hides, it is a question whether it is worth it, considering the amount of damage it might do to trade?—With hides every professional man has in mind another disease—anthrax. Of course, in all these matters—it is better known to you, sir, than it is to me, having regard to your intimate experience—that there are other considerations which cause it to be necessary to weigh the value of the benefit aimed at and the probable cost of obtaining it. I need not enter into disturbance in any other trades, and matters of that kind, because every member of this Committee must be thoroughly conversant with the necessity for considering such; and for foot-and-mouth disease alone, judging by the number of outbreaks that we have had during the last 20 years, I think that those who are opposed to disinfecting hides purely on account of foot-and-mouth disease, would have a very strong case in the councils of the nation against the proposal.

2792. But you would not say that as regards anthrax?—I do not say that as regards anthrax; no.

2793. Although our reference is as to foot-and-mouth disease, at the same time it is just as well to get out the question of anthrax to a certain extent as regards disinfecting these hides?—Yes, sir. If you are going to estimate the cost and the benefit, as I elsewhere suggested, anthrax may be put on one side as part of the benefit aimed at.

2794. Is there any other import, in your view, which is as dangerous as hides? How about sheep's heads, or calves in their skins?—As to calves in their skins, I have read some of the recent statements, and know that a certain amount of danger, and, of course, *prima facie* the head and the feet of animals must be very liable to contain the virus if they have had foot-and-mouth disease, consequently they must come within the pale of suspicion. I presume that in the majority of cases they are disinfected by the process of preparation for which they are brought to this country, and that the chances of their getting where stock is are not as great perhaps as hay.

2795. You think hay and straw which is used for packing is a dangerous import?—Yes; it cannot be free from danger. I was impressed by one of the outbreaks of which I saw a good deal. It is my own conviction that the virus was brought over in packing material. I was not officially engaged in it in any way, but I had an opportunity of observing it.

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2796. Of late years?—Not any of these recent outbreaks. No; that was the Barnsbury outbreak—that is 20 years ago, is it not, at Islington? It broke out in a dairy there, as far as I can remember. They had some eggs from Holland, and the packing was about where the cows were. I may say I have introduced it myself with hay, experimentally.

2797. You have?—I think perhaps that that ought to go in. I have introduced the disease through contaminated hay. I have contaminated the hay down in Derbyshire and brought it back to North London, and produced it in animals there after four days. That is the furthest I can go. I do not know of any other experiments of the kind. This was in 1884, when we were carrying out some experiments in foot-and-mouth disease at the Veterinary College. The country was simply full of foot-and-mouth disease, so we were not alarmed as now. We had some difficulty in getting virus, and I went down to a place between Nottingham and Derby to see if I could get some. There had been a reported outbreak there, but I could not find the veterinary surgeon who was in attendance, and while I was there I heard that there was another outbreak at Milton, the other side of Derby. There I could not find the inspector, but discovered in a field by the roadside two cows affected with the disease. I took some hay from a rick, and, after a long chase on a very hot day, managed to overtake one and rub her mouth and muzzle with the hay, which I placed in a bag and brought it home, kept it for four days, and then induced the disease in a previously healthy steer, not by scaring, but just by rubbing it about the nostril gently, and then giving it to the animal to eat.

2798. That you did when foot-and-mouth disease was rife?—That I did in 1884.

2799. When you were at the Veterinary College?—When I was at the Veterinary College; I would not have done it while I was an inspector.

2800. I knew that; I was going to say that. That was when you were at the Veterinary College?—Yes.

2801. There are just one or two other questions I want to ask you. When you were at the Veterinary College—I do not know whether it was when you were there, but some years ago—when there was a good deal of foot-and-mouth disease in this country, you sent classes of young students down to Deptford to study this disease, did you not?—They used to go down there, yes.

2802. They used to study diseases there?—Yes.

2803. About foot-and-mouth disease, and cattle plague, &c.?—Yes; that was previous to 1880; it is a long time ago.

2804. But the fact remains that those students did go down and learn really about those diseases?—Yes, they had ample opportunities in those days.

2805. Well, since that time; since we have been free, of course, the rising young veterinary surgeons have not had that opportunity have they? I mean they have not been able to see what foot-and-mouth disease is?—No, they have not.

2806. And the consequence is, I suppose, that there is a certain number of them in this country now who have really never seen foot-and-mouth disease?—Oh, there must be many.

2807. And, therefore, it might be a serious danger now if a veterinary surgeon came in who had never seen it, and he immediately said he did not know it was foot-and-mouth disease, and, therefore, he gave a clean bill of health. There is a danger of that, is there not?—Well, I do not know that the danger is much greater now than it was then. Our men have very considerably improved, and though no foot-and-mouth disease is existing, it is lectured on most specifically, and particular attention is directed to the immense importance of anything of the kind, and it is very well known now they would be probably more suspicious than they would when that familiarity existed which sometimes breeds contempt. That is my opinion. It is not such a difficult disease to describe. We have specimens still in spirits. We have casts of the lesions taken at the time coloured and uncoloured. I have heard the view rather frequently spoken recently—I am away from teaching altogether now and have not any personal association—

but I really think we are safer in the hands of the veterinary profession to-day than we ever were before.

2808. I am very glad to hear it, very glad. Well, on this question there was some evidence given that the stock-owners are the people who do not know what foot-and-mouth disease is very often, and do not call in their veterinary surgeon, and it was suggested to us that circulars ought to be issued to stock-owners to inform them of what this disease is, and inform them what action they ought to take at once. Now, do you think that would be a good move?—I think it might be dangerous not to do it, sir, and I think I should adopt the suggestion myself. But I really have not very much hope from the Board of Agriculture's circulars that are distributed, when there is nothing absolutely in existence, whether it is imminent or not. When the matters are in existence and people are frightened they might read a Board of Agriculture circular, but, of course, I am bound to say against that, as I said about my profession just now, that the agricultural community has now got up to the point, I will not say of education but of advancement, at which its members generally are more appreciative than they were.

2809. (Sir Bowen Bowen-Jones.) You say that you cannot guarantee the vitality of foot-and-mouth disease to exist at any rate more than 12 months. Would you be of opinion that it is possible that a recent outbreak has occurred through ditches being cleaned out where foot-and-mouth disease existed on the farm 30 years ago?—I should not.

2810. Now, with regard to your observations about pedigree animals: of course we can all see it would be a great advantage to pedigree breeders if the period at which they could export from here to foreign countries was lessened, especially after an outbreak. How would you suggest that that could be carried out? I do not quite understand. After an outbreak is declared free here, that is the first thing that must be done?—When after an outbreak we are declared free here, with the experience that we have had recently of the power of our Board of Agriculture to deal absolutely conclusively with these outbreaks of foot-and-mouth disease in this country, I think any Government desirous of having animals imported into their country should be satisfied very much sooner than they are now. But I should not depend solely on that. My idea was that animals should be taken to a quarantine station, and I think that three to four weeks would be sufficiently long to keep them there if they had not developed the disease. Three weeks I would give, myself, but, of course, we have foreign countries to satisfy, and must allow for a little elasticity about such matters. I think then the animals themselves would be free from the disease, and as the outbreak before that time would have been effectually dealt with there need be no fear of these animals obtaining other germs; that it comes within practical politics. As I said when I suggested it, I have not elaborated in my mind any scheme, but it has for some time occurred to me that some of the difficulties in relation to the export trade of pure-bred animals might be met in that way.

2811. Yes, but people on the other side—we will take the Argentine as an example, which is one of the countries we export pedigree stock to—there are a certain number of people interested in those parts in keeping our pedigree stock out because it suits their own purpose in trading, who have influence with the Government, but how will you get over their objection to taking our stock with a short quarantine?—You will have to depend on the influence of the persons out there who want to import, which ought to be paramount. I do not know whether that ever has been really tried on the Government because, of course, if wealth goes for anything there—I have understood it goes for everything—the importers should exercise very great influence.

2813. You suggest the quarantine takes place at the port of embarkation?—Here, and that they should be satisfied.

2814. At the port of debarkation?—Yes.

2815. Here?—Quarantined here and satisfied at the port of debarkation.

2816. I see. Oh, I did not grasp that. Well, that is quite a novel proposition. Would they ask for

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anything in return for that? Would the *tu quoque* come in there, do you think?—They might ask to send live animals; we should be glad to receive dead meat.

2817. Yes, I should like to see your scheme elaborated a little more; it is worth thinking of, I think?—I am quite sure this Committee is capable of elaborating this scheme which perhaps has a useful germ in it. I am not satisfied altogether that the proposition would be at once accepted.

2818. Well, how would that apply to other countries, our colonies, Canada and New Zealand. New Zealand requires a quarantine now, I think?—Well, I think New Zealand should be more easily satisfied even than a foreign country. Of course, I may hold a much higher opinion of the powers of our Board of Agriculture to cut short outbreaks of foot-and-mouth disease than our New Zealand friends would be disposed to entertain, but I think New Zealand is one of the very first places which should do it for two reasons; the length of the journey—

2819. But you know the Australians have always been very strong about quarantine and long quarantine?—Oh, yes, I know that perfectly well.

2820. I cannot quite see how we could offer them any inducements to lessen them. If we could it would be a very desirable thing?—Well, when you get this consultation we should have a general agreement as to the nature of disease and the chances of its spreading. Under such circumstances you should have no difficulties, and your colonies should be convinced first. The ground of my suggestion is, that there is absolutely no danger. I believe that under such conditions there would be no danger of any country importing disease from this.

2821. I agree with you, if we are free from disease. The only disease that I see that there is danger of exporting when we are free from our outbreaks of foot-and-mouth disease is scab?—We might send a little swine fever.

2822. Scab, of course, and swine fever would not apply to cattle?—No.

2823. (*Sir Charles Rose, M.P.*) You have told us here that it can be communicated by germs in any conceivable amount, but is there not any disinfecting agent which would exert an influence upon it? The only thing you mentioned was sulphuric acid; would not an ordinary disinfectant have the effect of destroying it?—Yes, it is easily destroyed by ordinary disinfectants.

2824. Any ordinary one used for cleansing and health purposes?—It was only a forcible example!

2825. I was wondering how far you go down the scale, because it has been suggested with regard to the importation of hides, that the cleansing of ships' holds, and so on, might act as a disinfectant and destroy it. Do you think that would be the case?—As regards foot-and-mouth disease it probably would. It is a comparatively weak virus outside the animal's body. It is not comparable with some of the other viruses, anthrax, for instance.

2826. I thought perhaps you had an opposite view as you only used that violent means of disinfecting, but I understand now a very moderate one would destroy it?—I think so, yes.

2827. You said that it would be carried by almost any means, and great distances. That being the case, I suppose whatever restrictions we made, whatever we did here, we should always be liable to intermittent outbreaks in this country?—That is my opinion absolutely. There is nothing I could suggest except keeping everything outside altogether; stopping all communication.

2828. I understood you to say you are of opinion that it really had lost its seriousness in this country owing to the effective measures now taken under the Board of Agriculture?—Yes, I hope so if they are continued. It requires absolute continuance and increased co-operation if anything, of the agricultural community. Notification is the key-note. An active force is ready to go into operation at any moment the disease appears. Now if foot-and-mouth disease gets a hold in this country it is my firm opinion that it will be the result of delayed notification of the existence of the disease on the part of stock-owners. Foot-and-mouth disease is not a condition which exists any length of time without

any stockman being able to tell there is something wrong with his animals.

2829. You agree that so long as the present Regulations are enforced and carried out effectively, that is to say, we pounce down upon any case the moment it occurs, there is no great risk of a serious outbreak in this country?—I think not, while the present lines are acted upon.

2830. Can you suggest any means of improving the Regulations or tightening them up?—As regards past outbreaks occurring here?

2831. Yes?—No.

2832. You think they carry out everything that is necessary?—I think we can never hope to do better than we have done during the past 10 or 12 years.

2833. May I ask you just one other question. You have told us your opinion as to the desirability of common action being taken with the other continental countries; can you tell us in what way you would suggest common action being taken? Would it be by scientific research or by commercial restrictions; in fact, if you were on a Commission what would you suggest on the point?—Both, certainly. I should suggest, in the first place, that they should adopt measures of the same kind which had been successful here, and if these resulted in doing in foreign countries what they have done here we should have accomplished our purpose.

2834. Would that be feasible; I mean to say, would the same measures that we adopt here have really any practical result there?—Of course, there is always difficulty about land-frontiers as compared with coast-borders, but even the difficulties there may be overcome, very much more easily overcome now than 30 or 40 years ago. There is much more known about the frontiers; the frontiers are more easily kept than they were.

2835. But you would not suggest that they should carry out the same Regulations that are enforced here, that when any cases are found to exist they should adopt the same stringent measures, having an area and a sphere, and prohibit the transport and the movement of cattle? That would be absolutely fatal?—I am afraid I do not understand the question sufficiently to give a positive answer.

2836. You know the Regulations in force here when an outbreak occurs. All the cattle are destroyed; you would not suggest that that should be done?—Not where there were 500,000 outbreaks of foot-and-mouth disease in one year.

2837. That is the point; would it be really practical?—We, sir, have had a million cases, nearly half in one year in Great Britain, and the measures which were adopted then, mild as they were, had, in association with natural conditions, the effect of reducing it in two years to one outbreak in the year, after which we enjoyed complete freedom for more than five years.

2838. (*Mr. Field, M.P.*) What is that year, please?—From 1881 to 1886; one of these years. In 1883 there were recorded 461,000 cases.

2839. (*Sir Charles Rose, M.P.*) Might I ask you again what you would suggest if such action as is taken in this country would really not be applicable to foreign countries. What would you propose?—That they should begin as we began, by restriction of movement.

2840. You, of course, have directed all your abilities and energies to seeing how it can be stamped out scientifically; you do not go into the other side, the commercial side, as to what the loss inflicted on the trading community would be by any drastic measures?—Well, I do not pose as an expert on all aspects of the question, but I have not altogether neglected considerations for other trades.

2841. You mean you bear that in mind?—I bear that in mind; I am interested.

2842. Perhaps you are also interested in the export and import of cattle here, from the suggestion?—In the export of cattle.

2843. And the quarantine on this side, and the quarantine on the other side?—From that point of view I have to say that I am not immediately interested except for my neighbours; I have no cattle to export.

2844. But, do you think putting a quarantine at

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the port of export would really be commercially possible?—Well, I think it is worthy of consideration.

2845. How long would they have to be in quarantine?—For about three weeks.

2846. And you really think that that would not take away the whole of the possibility of profit?—Well, I am under the impression that the prices usually obtainable are sufficiently good to admit of payment for the privilege without much distressing the buyer and seller.

2847. (*Sir Harry Verney, M.P.*) You told us that if a thin layer of the virus was exposed to the sunshine it would soon die?—Yes.

2848. What do you mean by "soon"?—A thin-spread layer exposed for 20 or 30 hours, or thereabout.

2849. Then there was one question with regard to what you told us at the beginning; I am afraid it is asking as a layman about the virus being filtered. You said there was a filter which would stop the virus?—That was reported.

2850. Then, would it mean this, that if you had a liquid infected with virus and the liquid passed through this filter, when it got through the filter it would be quite inoculable?—The filter that stopped the virus is one with the finer pores.

2851. There is a filter which stops the virus?—That is stated; I think the statement will be found in the report of the Berlin Commission.

2852. Do you know the name of it?—Kitasato, the name of the Japanese who invented it.

2853. (*Mr. Lane-Fox, M.P.*) You mentioned butter as one of the substances that might possibly bring the disease here?—Yes.

2854. You admit that is a very remote contingency?—In a list of possible media perhaps, but, so far, there are no grounds for assessment of relative importance. I placed it at the distal end. It is one of the most remote.

2855. It hardly need be considered seriously. Have you ever been round the docks and seen these hides and food-stuffs and all the rest of it come in and beshot down on the quay?—Yes. I was port examiner for foot-and-mouth disease for some considerable time.

2856. Do you not think there is a serious possibility of contagion if you had perhaps an infected hide or carcass shot out on the quay and then food-stuffs immediately after, and then possibly something else?—There is a risk; yes, of course. We can measure the risk there is by the number of outbreaks we have had during the last ten years, and we cannot talk about any immense risks when we have not had 10 outbreaks in the past 10 years.

2857. But do you not think something might be done to separate the various articles—food-stuffs—from being put on the same place?—Under all circumstances they should be separated.

2858. But that might be done on the quays; that is what you mean?—Yes. Hides are frequently, I am sorry to say, brought home on the top of the general cargo. That is a state of affairs which I think could be put a stop to.

2859. (*Mr. Field, M.P.*) That is general?—That was the usual way of doing it, but it is extremely unsanitary and disgusting, and I think the Board of Trade should have no difficulty in putting a stop to it; but, of course, I do not know the powers of the Board of Trade, or their limitations.

2860. (*Mr. Lane-Fox, M.P.*) It would be difficult for us to stop that, more difficult for us to regulate than it would be for us to regulate our own docks, would it not?—Yes.

2861. You said you would be in favour of more research. Have you any suggestion to make to the Committee as to the lines which research would take in this case?—Well, it was not my original suggestion about research. In answer to a question, I said it was desirable to gain as much knowledge as could be gained on the subject.

2862. Yes, but have you any suggestions to make on what lines it should proceed?—I think it is rather important that we should know how long the virus retains its power to infect, and under what circumstances. I think there we have a point for inquiry which might

possibly result in acquisition of knowledge of value in formulating measures for controlling the disease.

2863. You agree it would be unsafe to have an experimental station in this country. Do you suggest we should send abroad?—I read Mr. Runciman's speech referring as to what was suggested about foot-and-mouth disease, and I think it is pretty evident that for some part of the Empire, we should endeavour to obtain some more knowledge. India Mr. Runciman particularly referred to, and, I think, indicated his intention to institute some investigations there or in reference to the existence of the disease there. After the disease has existed in the country and exhausted certain of its pabulum and exhausted itself, it may lose or acquire qualities which it is desirable to inquire into; and foot-and-mouth disease in a country like India, where caste has to be considered, presents special problems. Immunisation has been under consideration for a very long time, immunisation of animals against foot-and-mouth disease. It is a thing we do not now need to consider for application here, but in any one of our colonies we might at any time want to apply some immunising material.

2864. Have you ever had it suggested to you that any good could be done by facilities given to our veterinary surgeons to travel in European countries and see the disease there to get more experience?—Yes, I have heard the suggestion.

2865. Do you think yourself that would be possible; that foreign Governments would make it possible?—They usually give facilities, but with foot-and-mouth disease I daresay they would be careful in laying down conditions. I mean to say, if permission were granted, the visitors would only be under the same restrictions as the veterinary surgeons of the country; whether they would encourage the going about the country of irresponsible persons I really cannot say; that must be according to the temper of any Government, or any department of Government, I think.

2866. You have never yourself travelled abroad making any investigations?—Not in foot-and-mouth disease. I have travelled a little in various parts of the world.

2867. I know; but I meant on this particular disease?—Not in association with foot-and-mouth disease. I have seen foot-and-mouth disease on the Continent.

2868. (*Major Dunne.*) I wanted to elaborate, just a little bit further your suggestions as regards quarantine. In the interests of the exporters of pedigree stock, I understand you would like to see set up a quarantine here at our ports of embarkation in order to enable them to get a certificate in order to export the animals, say after three weeks, with a clean bill of health?—Yes.

2869. Well, would it not result that the other countries—take the Argentine, for instance—would at once say to us, "Well, we are quite prepared to establish quarantine stations at our ports of export in order to enable us to give a clean bill of health to animals that we may wish to export here," not necessarily pedigree, but in order to introduce other animals?—*Tu quoque.*

2870. Yes, exactly.—I think I understand that. But before you can do business, you must try to make a bargain. Before you make a bargain, you must enter into negotiation. I believe there is a genuine desire and an intense need for our blood in the Argentine at the present moment; never so great, from what I hear. I think it should not be very difficult to convince the authorities that long freedom from uncontrolled disease, our insular position, and our power of immediately suppressing the sporadic outbreak, place this country in a position incomparably superior in this respect to their own.

2871. Is there not an intense desire on their part to export their animals here?—I think that is waning, because the dead meat is being transported at much less expense and under better conditions altogether, and I do not think there is such a great desire to export live animals as there was.

2872. You think they would not use it as a lever to try and break down our restrictions?—I am sure they would. Governments always bargain. I believe Govern-

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ment bargains are made under much the similar conditions to live stock bargains.

2873. You are very strong, I take it, that nothing shall be done to weaken the restrictions that we at present have in regard to the import of live animals?—Yes.

2874. And you do not think that this would be used as a very strong lever in order to break down these restrictions?—If the terms are too severe we simply have to say “no, we cannot accept your terms.” My idea was that the suggestion might be made, because I am bound to say that I think it could be done with perfect safety to the other side, and if their desire is great to have our best blood, that they could be brought to see it, if they would consult. I do not know that the Argentine Government, or the Chilian or the Mexican Government care much about consultation with other Governments. They are not easy to consult with, I have heard, but I think it is something which might be attempted.

2875. Then, as regards disinfection, we have heard a great deal about the possibility of the disinfection of holds of ships; do you think that is a practicable measure?—As far as foot-and-mouth disease is concerned it would be easy.

2876. But I take it that while it would be efficacious in the case of foot-and-mouth disease, it would not necessarily be efficacious in the case, for instance, of the spores of anthrax?—Quite so.

2877. And, therefore, in the one case, while a comparatively cheap method, a cheap disinfectant might be used which might give us a certain guarantee of safety as regards foot-and-mouth disease, it would not necessarily follow that we should be equally safe from the importation of anthrax?—That is so.

2878. Do you think that there would be any great objection, on the part of shipowners if the regulations were enforced for disinfecting ships?—Yes, I suppose there would be, but shipping people have a faculty for getting over those little difficulties very quickly. They are subject to many restrictions, and I do not think there is usually much difficulty in enforcing them.

2879. Then, you think the risk of infection is sufficiently great to warrant regulations on this subject being set up?—That is another matter, sir. I can only take the risks of infection from all sources, that and other sources, as measured by this number of outbreaks in Great Britain within the last 10 or 15 years, and supposing they have all been introduced in that way, the risk is not very great. In your part of the bargain you have comparatively little to expect for what you are asking, I think.

2880. (*Major Dunne.*) Then, you must balance, of course, the advantages too with the agricultural interest against the disadvantages, say, to the transport interest, and if you think that the one is greater than the other, it either should or should not be carried out?—I quite agree as to the advisability of putting forward a practical proposition, but unless you put forward your proposition, even if you are strongly convinced, it will never be carried out. But I think there you will have some difficulty for foot-and-mouth disease alone to convince. The Board of Agriculture would have difficulty to convince the Board of Trade or the Customs that the thing was worth pushing.

2881. (*Mr. Bathurst, M.P.*) Are you aware that, at present, cargoes of hides and of grain and of feeding stuffs are carried in the same holds without those holds being either cleansed or disinfected between the two consignments. However, it appears to be the fact from what we heard yesterday. That, from your point of view, is very undesirable, I take it?—Most undesirable, that such mixed cargoes should be carried. Are hides imported into Great Britain in the hold of a ship and that ship free to go after she has discharged the whole of her cargo; she may have discharged part of her cargo on her way there.

2882. We were told that yesterday?—I do not know. I was under the impression that the Customs had the hold disinfected.

2883. No, we were told, by a representative of the Customs that hides or grain or feeding-stuffs may be carried consecutively in the same hold, without any cleansing in between, the feeding-stuffs being carried in

bulk unpacked. That, from your point of view, would be most undesirable?—Most undesirable.

2884. What do you consider would be the cheapest, and at the same time a sufficiently effective method of cleansing or disinfecting these holds, in order to prevent the communication of this particular disease?—Some aerial disinfection, the fumes of something, of sulphur or formalin.

2885. Well, with regard to formalin, we have had formalin and corrosive sublimate mentioned to us as desirable disinfectants?—I did not say corrosive sublimate.

2886. I want to put these two together, you will see my reason, as desirable disinfectants in the case of a persistent disease like anthrax, but possibly not necessary in the case of a less persistent disease, such as foot-and-mouth disease. You would share that opinion, would you?—Yes.

2887. Well, then, what less expensive disinfectant would you recommend?—Well, I suppose sulphur fumes; sulphurous acid really would be the very cheapest.

2888. Is that what is known as sulphurous di-oxide?—Yes.

2889. That would be comparatively cheap?—The cost of fumigating with sulphur would be trifling.

2890. Would that be cheaper than, say, a 2 per cent. solution of carbolic acid?—It would be actually cheaper, but I do not think the difference is worth considering, the difference in price of the material.

2891. The use of either disinfectant would not be so expensive, or involve so much labour, as to result in too much cost to the ship-owner?—No; the only objection would be that the ship would not be able to take, after carbolic acid, any fresh cargo of grain immediately.

2892. Would that apply to carbolic acid in a weak solution?—I think I said carbolic acid.

2893. No; you said sulphur?—Sulphur is gone; you can use it immediately afterwards. Sulphur is frequently used with corn and oats; there is no danger to health associated with sulphur fumigation.

2894. On the whole then, you recommend sulphur?—Sulphur or formalin. Of course, formalin is a little expensive, but it is very effective and it may be applied in very minute quantities.

2895. Would the use of such disinfectant in the hold of a ship involve undue delay, and would there be a possible charge for demurrage, in your opinion?—I think it can be done very quickly.

2896. I am particularly interested in the suggestion contained in your last paragraph, being, as you know, to some extent, an exporter of pedigree stock myself. With regard to quarantine, is it your opinion that the demand for pedigree stock, say for the Argentine to-day, is so great as to make the suggestion as acceptable to the Argentine as it would be to our own pedigree breeders?—To the Argentine buyers, if you put buyers on the one side and breeders on the other. I am not sufficiently conversant with the conditions in the Argentine political world to know how that political world could be moved by the desire of breeders on the other side, the owners of Estancias and such like, but I think the Estancio owners are as desirous of buying our animals as we are of selling them.

2897. Yes, that is what I mean?—That is so. I think they are equally desirous, and if they are as influential as I understood they are, and were as absolutely convinced that they would not have foot-and-mouth disease, I think they could be reasonably asked to exercise their influence on their Governments, and that possibly something might be done, but it cannot be done unless it is attempted.

2898. I think I am right in saying that there is no strong desire, as yet, on the part of Argentine breeders to place their store cattle in this country. That is a view that emanates, I think, mostly from Canada?—I do not think the Argentine has ever been so strong on this point. Their exported cattle are generally three years old and ready for slaughter before they come here.

2899. And bearing in mind the serious loss of trade which is suffered by pedigree stock owners in this country when an outbreak of foot-and-mouth disease

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occurs, estimated, I believe, during the last two years at over 100,000*l.*, such a suggestion would probably be welcome to British stock-owners?—I think it would be welcome to British stock-owners, because they would stand to lose nothing from my suggestion.

2900. (*Mr. Field, M.P.*) And they have something to gain?—Well, I think so.

2901. (*Mr. Bathurst, M.P.*) A colleague of mine suggests that on the other side there would be the cost of keeping them?—I am perfectly satisfied about the prices which are obtained for our English pedigree stock. The odd shilling left off the guineas would probably pay for all that. I do not think that would be an obstacle.

2902. I want to put to you a somewhat similar suggestion with regard to research and experiment in the matter of foot-and-mouth disease. You yourself, I think, admit that imported hay and straw and possibly other feeding-stuffs may be a cause of foot-and-mouth disease in this country? Is there any objection to feeding hay and straw, or possibly other animal food-stuffs found upon infective premises and traceable to an infected source to sound animals in order to ascertain whether that is really the source of the disease, assuming that such experiments were carried on under the greatest possible precautions and, as has been suggested already at this Committee, in an island off the coast of this country or possibly at some distance from the coast of this country?—It is desirable to have the information. I think that was included in my answer, and if it could be done with safety, it would be worth doing. Of course, foot-and-mouth disease is a disease which spreads like wild-fire, and the knowledge of an outbreak of foot-and-mouth disease brings about the embargo you were speaking of just now, so that one has to be very careful of it. But I do not see that it is absolutely impossible to arrange so that foot-and-mouth disease might be limited to the place in which experiments are being carried out.

2903. You admit that is unsatisfactory when these outbreaks occur not to be able, in any case, or I should say in most cases, not to ascertain the cause?—That is most unsatisfactory.

2904. And you admit, I think, also that the source cannot be ascertained with the help of the microscope, because the virus is ultra-microscopic, but is there any other possible means of ascertaining the cause except to adopt such a course as I am suggesting?—There is no other method, except subjecting susceptible animals to the action of suspected material.

2905. That is what I want to know?—There is no other method, but, of course, there are two sides to that question. Given an outbreak of foot-and-mouth disease in the country, you are led by circumstances to suspect a certain article; a part of that article or material has been consumed, and if it produce the disease certainly some part which was infected has been consumed; the negative evidence which you would get would be the dangerous part of the experiment. You see it is only the positive part of the evidence which you may or may not get which would be of any value. Now, if you tried this on a truss of hay which you really were convinced had been the cause of the disease in that outbreak, that started the outbreak, and you fed a dozen animals on the rest of that truss and none of them took the disease, but remained absolutely free from suspicion of it, it does not then show that that which was eaten did not produce the disease.

2906. Oh no, that is not the point. But assuming that is so, no great harm, I suggest, would have been done, whereas if it is found that it does produce the disease, there would be a considerable addition to our present knowledge as to the source?—Yes, but I am bound to say, though I am in favour of further experiment in every way where it can be done, that that is not the point at which the experiment is most desirable, because the fact of not finding any germ in the rest of the hay would, of course have to be published, and nine people out of ten would say that was not foot-and-mouth disease at all, or it had not come with the hay; one of the two conclusions. That appears to me to be the dangerous part of such experiments, which it must be borne in mind that the material for the experiment

can only be obtained from a place in which disease exists or has existed, and so is liable to have been contaminated by animals affected there. Do you follow me?

2907. I follow you, but I am not sure that I agree with your conclusions?—No, we do not always agree.

2908. But surely if you had in an isolated island sound animals to which you were to feed under proper precautions?—I am not suggesting that. I fear I may have prolonged my answer a little bit too far. In fact discovery or non-discovery of the infecting material would not be absolute proof that the disease was or was not introduced by the material experimented with. I think it would be unsafe to say we do not want to put an embargo on hay simply because we have found ninety-nine hundredths of it not containing the virus.

2909. But surely it is more serious, is it not, to be influenced as we are at present in putting an embargo in restraint of trade on certain articles which may not be the source of the disease?—But then you cannot prove the one or the other, because the portion of hay which the animal has eaten may have contained the virus, it may have contained a flock of lymph, and still hay remains a dangerous article, whereas if only the other part were tested on animals, hay would from that experience remain a safe article, and we should have to import it.

2910. But not necessarily a safe article under all conditions?—Oh, no, but if you are to build up your future action on the experiment.

2911. I am not suggesting to you that we should cease to suspect, or even exonerate on infected premises, feed-stuffs of this character, because a negative result is produced, but admitting, as we do, that it is unsatisfactory not to be able to trace the cause of these diseases through some medium other than an infected animal, which you admit, surely there must be something gained as an addition to our present knowledge if some such experiments are carried out?—Well, of course, there is the chance of gaining knowledge, but then there is the chance of the negative occurring, and that being dangerous.

2912. That being dangerous?—Rather dangerous. Shall I just say this: A fortnight ago the present Minister of Agriculture met a deputation from horse-owners in London and the neighbourhood, who tried to get the Order of 1908 rescinded. Now, if they had gone with the weapon that six cases had been tried and 36 animals had been tested with incriminated hay and they all failed to take the disease, it might have convinced even a Minister of Agriculture.

2913. (*Mr. Field, M.P.*) What sort of hay?—Imported hay.

2914. Imported hay from infected countries?—Yes, anywhere.

2914A. How do they get it in if there is an embargo on it?

2915. (*Chairman.*) You misunderstood. I do not think Professor Penberthy said it had been brought in; he said this deputation asked that it should be; that the Order should be taken off?—Yes.

2916. (*Mr. Bathurst, M.P.*) Your great fear, as I understand, your great objection to the adoption of such a course, is the weapon that you might place in the hands of the ignorant, which the Board even might not be able to resist in the direction of showing that these articles are under all circumstances free from disease?—All deputations will use arguments, and I say that would be a very strong argument in their hands. That is one great objection to it. I am afraid I should do what Mr. Stockman did, probably take a little of the virus home, and then burn it afterwards.

2917. Well, I quite accept that; I will not carry that line of questioning any further; but one further question I want to ask you?—I must answer your question in the affirmative, that if we could get positive information from that means of dealing with it, it would be most desirable, but, of course, I am only a prophet on this point; I am afraid that we should get a lot of negative information which might injure us. I am not now speaking about experimental stations altogether.

2918. Well, assuming that you could, and you do

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not admit that we can, obtain reliable information in this way, would there be any serious risk, in your opinion, if such experiments were carried on under all proper precautions in an island away from the coast of this country?—Well, Lundy Island might have been used for that purpose. I think experiments could be carried on with comparative security in an island. There are difficulties and possible sources of fallacy, but I do not say these difficulties are insurmountable; I hope not, and I hope further experiments will be carried on with foot-and-mouth disease.

2919. And you do see the advantage in our carrying on experiments in this country, assuming the funds are available for carrying on further experiments and research in order to find out more about the nature of the disease and the means of its communication?—If it is practicable.

2920. Yes, that is a big "if," is it not?—Well, I will tell you why I make the "if" so big. It is a desperate disease to experiment with on account of its awful contagiousness. The results of many experiments have been stultified by non-recognition of some source of fallacy, and that leads one to speak with caution even about the results of the Berlin Commission, or of the French expert evidence. I have in my mind that in some experiments absolutely the wrong conclusions were come to because of contamination of some of their animals from other unrecognised sources than the experimental ones. There is danger, but I do not think there is danger that cannot be overcome. I think you could limit it if you got on to such a place as Lundy Island—a very good place for the experiment.

2921. (*Mr. Field, M.P.*) Would you send the Board of Agriculture over to the island?—I am very well disposed to the Board of Agriculture just at present for the good they have done in foot-and-mouth disease.

2922. (*Mr. Bathurst, M.P.*) You are aware that experiments are going to be conducted with Government money in India?—Yes, sir.

2923. Do you consider that these experiments, carried on under somewhat different atmospheric conditions, will be any useful guide for dealing with the disease in this country?—I think the information gained would be applicable here, though perhaps not in every particular. But, in assessing the value of experiments the circumstances under which they are carried out first must be considered. Many of the circumstances would be analogous to those obtaining here, and identical. I really think we would get some information from experiments carried out in India.

2924. I am going to ask you rather a question which to a layman you may regard as rather beyond my province, but do you consider that experiments by way of inoculation are more valuable than experiments by way of ingestion?—No. Subcutaneous inoculation is not reliable in this case. That has been fairly well proved, that the foot-and-mouth disease virus, when put into the tissues of the skin in ordinary inoculation, can not be depended on at all to produce the disease. It is rather a curious thing, but I believe almost everybody is agreed on that.

2925. And the medium of infection being probably something that the animal eats, experiments by way of ingestion would probably be the most valuable?—Yes. And I do not think that the scarification or the suggestion of any injury to the mucous membrane which we have heard of needs to be taken into serious account, because if you have 80 animals, and you give them the material to eat, the chances are that 60, 70, or 75 will take the disease, and it is not at all likely that they all have wounds in their mouths. I think the fact of eating it is quite enough.

2926. I think you said in your examination-in-chief that it was usually considered that the expired air would carry infection?—For a short distance.

2927. Do you mean the exhalations from an animal's mouth?—That is put down in the category by scientific investigators. What proof they have I cannot tell. The difficulty of proving that is connected with the awful contagiousness of the disease, that you really could not say, supposing you were testing with expired air, placing one animal here and another animal there, and causing an affected animal to breathe through a tube the other

end of which is over the month and nostrils of a healthy animal, the latter might be contaminated from another source. It is extremely difficult to limit the action of the virus you are using.

2928. But when you make that statement you have not in mind, have you, the carriage in the exhalation of mucous or saliva?—Oh, yes, I include that.

2929. Oh, you have?—Oh, yes; virus is a particulate matter.

2930. We have heard this virus spoken of as a filtrable virus. As I understand from what you say to-day the Berlin Commission of 1897 established—perhaps I ought not to say established—but suggested that it was not a filtrable virus, but that a very fine filter indeed would arrest the germs of the disease?—That is so. That is the opinion I brought before the Committee, not as mine originally, but as the result of the experiments of the Berlin Commission of 1897 recorded by Loeffler and Frosch.

2931. Have any further experiments been made with this particular filter since then?—Well, they may have, it is a well-known filter, but they have not come to my notice.

2932. Do you happen to know whether it is in use at all in this country, this particular filter, for experimental purposes?—Oh, yes. I do not suppose it has been used in this country for filtering foot-and-mouth disease virus.

2933. Not in this country?—I do not suppose it has; no.

2934. Is not that a line along which further research is desirable in this country?—Yes; we want to know everything we possibly can about it. I do not know that the practical issue would be very great.

2935. You said just now that, in your opinion, an affected animal does not retain the infection after a few weeks?—That was an impression gained in the old foot-and-mouth-disease times. We used to let animals free soon after recovery; and, in fact, there was no objection to letting them free at all. They were turned by their owners into fields with others after three or four weeks, and the result was there were not many outbreaks afterwards. In this connection it is important to bear in mind the fact that when the foot-and-mouth disease has spread through a herd there may not be many susceptible animals left; they may be rendered temporarily immune by having had a mild form of the disease.

2936. But I think Professor Bang of Denmark holds rather a different view of the result of the experiments there, does he not?—Yes, that it is longer; the Berlin Commission said 14 days.

2937. I think in Professor Bang's experiments it was thought that up to 10 or 12 months infection remains?—I never had experience of that; I am not sure that I have seen whether Professor Bang's view that the period was so long was based on laboratory experiments or observation in naturally occurring outbreaks. In 1883, in this country, there were 461,000 animals affected with foot-and-mouth disease—I was going to say there were cases in almost every parish in the country—well, if they had all remained capable of giving foot-and-mouth disease for 12 months where should we be? Yet from 1885 to 1892 there was but one outbreak in Great Britain.

2938. You do not yourself believe in the possibility of recrudescence of the disease after a period of, we will say, a few weeks on the same premises. Where the infection has ceased on the premises for, let us say, six months, you do not believe that it is possible for the disease from the same cause to recrudescence?—Oh, yes, I do for the few weeks named, I do not know about six months.

2939. You do?—Yes, I do; as long as the virus will retain its power of infectivity. When that period has been measured I shall be able to answer more definitely.

2940. Its power of infectivity?—Its power to infect is perhaps preferable. It is not necessary to conclude that when a recovering animal has discharged all the virus from its system, it is *ipso facto* quite free from danger to other animals as its skin, &c., may have been contaminated; but the Berlin Commission went so far as to test the dung that was between the claws, and the

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longest period after recovery that they could infect with the dung was 14 days.

2941. The dung?—That was between the claws of the infected animals.

2942. What do you consider is the medium of infectivity in cases where there is a recrudescence after a long period?—I expect you have seen a case of foot-and-mouth disease.

2943. Yes; I have seen one only?—Well, the top of the vesicle, the specific lesion, which is like a piece of skin or soft parchment, is cast off, and may remain in a moist state, contaminated to the full with the virus, and in six weeks—I think six weeks, at any rate; six months some people say, but I have never had any proof of that—another susceptible animal may eat that, and contract the disease. Of course virus may be introduced from other sources.

2944. Do you believe foot-and-mouth disease can remain for any long period latent in the animal and possibly communicable from such animal?—I do not think there is any evidence of that in practice.

2945. Without any outside evidences of the disease?—I do not think so. My opinion is strong that it is not so.

2946. You referred just now to the smaller animals that are generally used for experimental purposes, and said that the virus was not easily communicable to such animals?—No.

2947. May I ask what those animals are, guinea-pigs, I imagine?—I had better read them out if I can find them here.

2948. Perhaps I will put my question in a different way. Would you include amongst those animals either hares, rats, cats, birds, or insects?—I would include rabbits, guinea-pigs, dogs, rats, cats, hares, mice, field-mice, hens, and pigeons.

2949. And wild birds?—Well, I cannot include those because I do not know that they have been experimented on. Those named were the animals which were experimented on, and as far as they go I have quoted every source I could give there.

2950. I think you included rats and cats?—Rats and cats, yes.

2951. It is not easy to communicate the disease so far as experiment demonstrates it to rats or cats?—Perhaps I had better read them more slowly: "In many cases attempts to infect rabbits, guinea-pigs, dogs, cats, rats, house-mice, field-mice, hens, and pigeons, by inoculating fresh lymph into the mucous membrane of the mouth, into the peritoneal cavity, the limbs, and feeding, did not prove successful." That is from the Berlin Commission. This is an article on foot-and-mouth disease which I happened to contribute to a journal some 10 or 15 years ago.

2952. In your opinion are hares, rats, and cats, likely means of carrying the disease?—Oh, certainly.

2953. On their feet?—Certainly, mechanical carriers. I think rabbits used to do a lot of the mischief in our foot-and-mouth disease times.

2954. Yes, but then they do not cover anything like so much ground as hares?—Or hares, or foxes, or animals which go far afield,

2955. Is it your experience that where hares or foxes are plentiful there has been a greater development of the outbreaks of the disease?—No, I have not observed it.

2956. Well now, you mentioned milk coming from abroad; is there much liquid milk coming from abroad?—No. Milk as fresh milk, no.

2957. Do you consider that there is any possible danger in milk?—Oh, there is a possible danger, yes.

2958. How?—Because it may contain the germ.

2959. I did not mean that, but I mean, how is it possible for the milk to communicate the disease to an animal here?—Well, pigs get milk which is not used; that is one way.

2960. Do they get foreign milk?—Well, I could not swear to that.

2961. I want to ask you about this 15 mile radius, about which I dare say you know the Somerset people have made considerable complaint. Do you think there is any virtue in a radius of 15 miles?—Well, I have no cast-iron views as to exact mileage. I do not know that

15 miles is very much better than 16 miles. I do not know that it is as good. But I do believe in wide areas for foot-and-mouth disease.

2962. But you also imagine, I believe, that you are more likely to carry out restrictive measures if they are not deemed to be unreasonable by the community?—Yes, I should make it as easy for the farming community as I could always.

2963. But do you not think it would be advisable and desirable to alter the area according to local conditions of market or otherwise?—I should be surprised if any officer of the Board of Agriculture said that they are cast-iron and that that could not be done.

2964. I only want to know your opinion; I think they would say that?—They do say such things, I know.

2965. But I should like to have your opinion about it?—My opinion is that the officers of the Board of Agriculture have shown themselves efficient, in these cases they have a better knowledge of the circumstances, they have only one interest and that is the stamping out of the disease, they have no personal interest to bring forward, or political constituents, to consider. The issue is successful. Disease germs must have a pabulum, and the wider you can throw your net the better, but the restrictions in the 15-mile zone, the outer zone, should be withdrawn at the earliest moment compatible with freedom from danger.

2966. I am much obliged to you for your eloquent and significant answer, but what I want to put to you is this: I think I am right in saying that there is no reported instance, at any rate in recent years, where the usual precautions have been taken of any spread from the original outbreak to the extent of more than six miles?—I am duly grateful for that, but that may be very largely due to there being a wider area.

2967. To there being a wider area?—Yes, it is due to the area extending beyond the six miles; that is my view of it.

2968. Then, do you hold the view—I am not quite sure that I understand your answers—I am sorry for that.

2969. But do you hold the view that it is necessary in every case to maintain an outside area of as much as 15 miles?—No, you must ask me another question.

2970. Perhaps you will increase that answer?—It must depend upon the circumstances.

2971. That is what I started by saying. You suggested just now that by co-operation we might do something to prevent the spread of this disease upon the Continent?—We might confer an immense benefit on the Continental countries. I should like to say that we could; then we could go to bargain about the other matter.

2972. But it is not altogether your suggestion?—You must not go behind my mind.

2973. No, I should not like to do that, but what I want to ask is this, how are you going to stimulate Continental effort in this direction, bearing in mind that you have got a land frontier, as you very properly reminded us?—But they have been stimulated. This consultation is what I want to see. I may be suggesting what is impracticable, and perhaps it is beyond the views of Government officials that such things should be possible, but if any Government really consulted with us and they were convinced that our plans of dealing with disease were the proper plans, and it was practicable in their country to assimilate them if they were adopted, they would believe in our power to keep out disease much more.

2974. May I know more specifically what you mean; it is most important; do you suggest that they should adopt as a first stage the exclusion of animals from a seriously infected country passing over their frontier, and as a second stage the slaughtering out processes which we carry out in this country?—When they can practically. They do now the first.

2975. They have restrictions on their frontiers?—On their frontier, oh, yes, nominally of the strictest kind. All their laws read beautifully, and in some cases appear even more stringent than ours.

2976. More stringent than ours?—I think so, from what I have heard they are even more stringent to

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read, but, I venture to think, it is the carrying out of them in which we are superior. We have better opportunities from our coast, being an island, and the land frontier is a different thing to keep, but inside, our Regulations are observed and are enforced more than they are there. That is what is generally complained of in this country by stock-owners, and it has really had the effect of allowing us to stamp out this and other diseases.

2977. How do you propose that we can tighten up or induce them to tighten up their administration?—By showing them what we have done, by communication and consultation. That is really all I mean by that.

2978. That is a matter which you consider ought to be brought before the next Congress in 1914?—At any time; in any Congress; at every Congress.

2979. And you are prepared to do so?—I am prepared to do my part. I should require much support, I should expect our stock-owners to say: "We will not hear of the admission of live cattle into Great Britain."

2980. Now, just turn to the Royal Veterinary College, with which you are so well acquainted. Are you in favour of a post-graduate course for the special study of this and other diseases for those who are likely to occupy public offices in connection with administration?—Yes.

2981. For instance, would you advise that all the veterinary inspectors of local authorities should go through such a course before receiving such appointments?—If they had not done so or qualified recently. A very large number of them have. There is a post-graduate course there for the purpose. Large numbers of men have availed themselves of that opportunity. I really think that even the graduate course might possibly be advanced.

2982. Even the graduate course?—Even the graduate course, yes. I do not much like admitting the necessity for post-graduate courses on special points, I think every veterinary surgeon should be capable of diagnosing and dealing with foot-and-mouth disease.

2983. You think it is a disease that is usually discernible without the investigator having actually seen it?—Yes, but it does not at all follow that the first person who sees the cases of foot-and-mouth disease shall be an official of the local or Imperial authority, consequently every graduate should be educated up to a standard which would allow him, almost force him, if he was a man of ordinary intelligence, to diagnose foot-and-mouth disease when he saw it.

2984. (*Mr. Hinds, M.P.*) I have only one or two questions that have not been covered. You have nothing to add to the methods which have been adopted by the Board of Agriculture at the present time in dealing with this disease?—In England.

2985. In England, yes?—In suppressing the disease when it is here?

2986. Yes?—No, I have not.

2987. So you approve of suppressing the disease by slaughter?—Yes, under circumstances of recent outbreaks; but of course, if we had 150 outbreaks in Great Britain the conditions would be altered, but on the appearance of disease, on the first hearing of an outbreak, I think it is the best means that could be adopted; it is preferable to isolation.

2988. You said something with regard to other countries taking the same precautions as we do at the present time for suppressing the disease?—Yes.

2989. Do you think slaughter should be adopted in other countries?—Absolutely impossible. The slaughter of every affected animal and every animal which has run the risk of infection would mean the extermination of the stock of the country in which it obtains very largely.

2990. There is only one other question. The label that we have heard talked of, that arrives on exported meat; do you place any value on that label?—On exported meat?

2991. Yes. Well, I cannot say I place a value on labels. I believe a large proportion of people in this world have a standard of morality which is high, but I think a label may be used for any purpose. That is about the marking of meat, I presume, is it?

2992. Yes?—I did not hear anything of that; I did not hear the evidence about the labels; it has not been up to-day.

2993. (*Chairman.*) What Mr. Hinds is alluding to is the Customs' evidence we had yesterday about these labels?—Yes.

2994. (*Mr. Hinds, M.P.*) The general certificates we get with regard to hides and everything else?—I do not think there is any reason to believe that they are systematically interfered with, but they are open to the objection that they might be removed and placed on other consignments.

2995. (*Mr. Nunneley.*) With regard to your précis you speak about an outbreak amongst foals. I do not know whether it is within the scope of this inquiry, but have you ever heard of a case yourself, of an outbreak yourself, amongst horses?—No.

2996. Where was this outbreak amongst foals do you say?—In Germany.

2997. But you yourself have never seen it?—Never.

2998. I saw a lot of this disease 30 or 40 years ago, and I always thought horses were immune?—Well, I think experimental horses have been found not to be immune.

2999. But do you think horses can take it naturally?—Well, I thought I would bring the most recent information I had got to the notice of the Committee, and I had in mind at that time the deputation asking the Minister of Agriculture to take the embargo off hay and to allow the importation of hay under licence for the use of horses only.

3000. But from your experience, you do not think that we need fear its being imported with horses?—No, not on account of their having the disease, but if we imported horses from infected places they could bring it on their hoofs or on their coats.

3001. Men could bring it. You do not think the horses would bring the disease in themselves?—I have not had the slightest evidence of it, and I suppose if any had occurred within the last 30 years it would probably have come under my notice.

3002. In those outbreaks you were acquainted with 30 years ago no precautions were ever taken with regard to horses, were they?—No.

3003. It seems to me from the scientific evidence we have had that at present there is a very uncertain knowledge as to how long the virus will retain its life?—That period is not defined.

3004. It would be an advantage if it could be?—It would be.

3005. If there were—I am not much in favour of it myself—but supposing there was an experimental station such as has been suggested, would there be any difficulty in carrying out such experiments as would fairly well show how long life would continue in the virus under what we may call natural conditions?—No, I think it would require a large experimental station to do it in, but I think I can answer your question by saying I do not think it is beyond the bounds of probability. I think they would be able to do it.

3006. I think you said that in laboratory tests it does not live long sealed up in hermetic tubes, and so on. I forget whether it was you or Sir John MacFadyean?—Yes, sealed up in tubes and kept under ordinary conditions in the sealed up tube it has been known to live for weeks, three weeks I think it was said, but I am not sure that the experiment was carried any further. But the Berlin Commission found that at a low temperature they lived from 9 to 16 weeks, but that is in an ice-house which is favourable to their retaining their vitality.

3007. I was rather thinking would it be possible to determine how long the virus could live under fairly normal conditions, that in the middle of a truss of hay, or anything of that sort. Well, if there was any experimental station, that would not be very difficult to carry out, would it?—Oh, very easy.

3008. Place some of the virus in the middle of half-a-dozen different trusses of hay and trace them, if they are brought to England, and keep them, and try them at different lengths of time?—That would be quite practicable.

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3009. That has never been done?—Never that I know of.

3010. So you have no proof really as to how long the virus can retain its life under such conditions?—Not beyond the four days I have mentioned in my own experiment and the other periods mentioned elsewhere.

3011. Well, we had the evidence with regard to Edinburgh, that it was brought from abroad, and it must have been in the hay for some weeks unless it was picked up?—I hope you will have your experiments better defined than that before you draw general conclusions from them.

3012. Unless it had been picked up in transit, or anything of that sort?—It appears that the virus was eaten by a large number of animals at the same time. That is pretty evident in that outbreak, because there were 81 animals affected at the end of the period of incubation. There is just the possibility that there might have been one case suppressed, not notified beforehand. If the truss of hay had been available, which it was not, as it was under the animals' feet, a little of that would have been a very good one for experiment, because in all probability there was a good deal of virus rather generally distributed for such a large number of animals to have been affected at the same time.

3013. Sir John MacFadyean told us of an outbreak in Denmark, or somewhere, where there was a recrudescence after something like 11 months. Most of the evidence we have had has been to the effect that it would be impossible for the virus to live for anything like that length of time. It could be tried, could it not, in that way?—Oh, certainly.

3014. But it never has been?—No, I think not.

3015. You have no personal knowledge?—I may say it is rather an awful contemplation to think it will live for 11 months effective to produce the disease.

3016. Yes, but I suppose you know in some of these local outbreaks they think it has lived for 30 or 40 years?—I have heard of this idea.

3017. You have heard the rumour; you do not agree with it, of course? Then, you spoke of butter being a possible, but I understood you to say a very unlikely, means of conveyance?—That is the communication to cattle.

3018. Yes?—Every other pound of butter may contain some of the virus—I do not believe it does for a moment, it is very rare—but given that they have very little chance of getting the butter. Cattle have very little chance of getting the butter, that of pigs is probably greater.

3019. Well, you would agree that butter may very well convey it; there is nothing in the manufacture of butter that would kill the virus, is there?—I only narrated that one experiment, being an extreme one, the only observation. I gave the name of the observer, who is a very careful man, and a great authority, a man who does not talk loosely though he has written a great deal, and I see no reason why the butter should not, under rare circumstance, infect if it got to a susceptible animal.

3020. But you know, I know, we all know, that the milk from cows that have got the disease will give it to pigs?—Yes.

3021. I have had that myself. Well, it would be quite possible to skim the milk from cows that have got it, and to make that into butter, if the cows had not got it very badly, or when it first began, one or two cows in the dairy?—Oh, yes, quite so.

3022. There is nothing in the manufacture of butter that would kill the virus, and it would be in the butter?—It would come with the butter.

3023. So it might come from abroad in that way?—Certainly. I can conceive of the introduction of virus in butter.

3024. And in that way it would not go to the cows, but it might very well go in refuse or from these big hotels, and go to the pigs, so that is quite a possible means of conveyance, too?—Yes, it is within the range of possibility.

3025. I thought it was rather more. Will you go rather further and say it was by no means impossible; hardly improbable?—In view of the statement I made just now that 400,000,000 lb. of butter are imported

into this country every year, while admitting that it is possible for the virus to be introduced in butter, we may reasonably conclude that it is not a common means of conveyance to this country.

3026. Yes, but might we not say that with regard to almost everything else, hay and straw coming in for packing, and so on?—But that is likely to be eaten by live susceptible animals, farm animals, and I think on a different footing.

3027. You say in your précis, I think, that you cannot suggest any measures which would give us absolute immunity?—Yes.

3028. While there is so much disease on the Continent we shall always be liable?—I should think so.

3029. I quite agree with you there, but do you not think if we could carry out certain measures, say the prohibition of hay and straw for packing where the disease is rife, and perhaps the treatment of milk and other dairy produce so as to sterilize it, that would be some additional safeguard at any rate?—Yes. Regarding the latter, first, in my opinion, no milk should come here before it was sterilized, for another reason, tuberculosis. I mean to say, weighing the things together, I think that if the Committee were deciding that that was a source of danger in connection with foot-and-mouth disease, it would not generally be regarded as a very great hardship, if the other matter were brought into account at the same time.

3030. And if such measures as that and the prohibition of hay and straw from countries where it is rife for packing could be carried out without undue dislocation of trade, it would be an additional safeguard, would it not?—Yes, I think there is no question about that.

3031. There, you say, we have to consider whether the game is worth the candle?—It would possibly have stopped three outbreaks within the last 10 or 12 years.

3032. You think it would?—Possibly saved large sums for the Government and stock breeders.

3033. (Mr. Richardson Carr.) The hay for packing do you mean?—I think I mentioned just now that I am under the conviction that one of the outbreaks, the Barnsbury one in 1892, really might be regarded as coming from packing of eggs brought from Holland where the disease was existing. I think packing-hay may be a cause of outbreaks in this country.

3034. (Mr. Nunneley.) It is one source of danger at any rate?—It cannot be disregarded.

3035. Then, with regard to disinfection which was spoken of, you rather suggested that we might disinfect not only against this but against anthrax, but for anthrax it would require a very much more thorough disinfection, would it not?—Oh, very much.

3036. And more expensive in that way?—I would not suggest that as a means of preventing anthrax.

3037. Not the disinfection?—I should not *ab initio* start that; I should not initiate that as a means of preventing anthrax. I should have the hides disinfected before they got on the ship.

3038. But you would have them disinfected here as well, if necessary?—If you thought it necessary, if they could be contaminated on the journey.

3039. And that you think would be a decided extra precaution both against this as well as anthrax?—What will kill anthrax will kill the foot-and-mouth disease germ, yes.

3040. To take another point, you were speaking of a circular which should be sent to veterinary surgeons and stock-owners, and you say it is hardly necessary now, or not so necessary because both veterinary surgeons and stock-owners are perhaps somewhat better educated than they were some years ago, and so on, but is there a danger of this breaking out with small-holders now who would not recognise it?—Oh, quite so; I think small-holders might even go to evening classes.

3041. I know that in my own county now we have a number of shoemakers who have a number of small-holdings, keeping two or three cows; men of that class. Would it not be likely to be of advantage to them?—Oh, no, they would have such a series of pamphlets that they would not take any interest in any pamphlet on foot-and-mouth disease, when it is not imminent and not at all on their minds. I think from my own

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experience the larger owners take special interest in classes in which diseases of stock are dealt with.

3042. I thought perhaps a circular issued once in 10 years would attract more notice than one coming very frequently?—Oh, I quite agree.

3043. Then do you think that might do good?—I do.

3044. A circular or an advertisement, a notice of some sort to be brought to the notice of stock-owners?—Oh, quite so.

3045. With regard to foreign countries, I suppose they could not carry out the same regulations as we do; perhaps they could not now, but if a foreign country were once free from disease, could not they carry out the same stringent rules with regard to slaughter?—Yes, they could, but if their neighbours' stock is markedly affected they would be much more liable to invasion than we are on account of it crossing the border.

3046. I quite agree with that?—But I may say they have done it. I do not know whether it is Holland or Belgium, but in some country they have adopted our methods comparatively recently with apparently great success.

3047. (*Mr. Richardson Carr.*) Denmark?—Is it Denmark; it is one Continental country.

3048. (*Mr. Nunneley.*) By means of conferences you think they might be induced to take further precautions or to carry out their rules more stringently than they do?—Well, I think they have to be shown that it is for their own good first. Everybody has in this world, I think, to be shown that the adoption of any measure would be for their own benefit, and I do not think it would be very difficult. It ought not to be very difficult to demonstrate to them that the plan adopted here has been a successful one, at a cost which is inconsiderable really in relation to the benefit that has been obtained.

3049. Just one other thing. You spoke of these small animals that are immune, but which act as carriers; but birds also would act as carriers quite as much?—Oh, quite so.

3050. There is considerable danger of their carrying it?—Yes.

3051. You have never known any cases where you can tell us that it was carried by birds, I suppose?—No. I adduced the view held in Denmark that the rooks did bring it to Denmark. I fear it will be extremely difficult to catch the bird in order to prove his guilt.

3052. You take that as one decided source of danger; I suppose you think birds could carry it from the Continent here?—Oh, I am perfectly certain of it. There are plenty of birds that go across the Channel taking an ordinary flight without alighting until our shores are reached.

3053. (*Mr. Richardson Carr.*) About the quarantine station; do I understand you to mean that the quarantine station should exist for all time; that the station would be a permanency? I take it, in this particular case, you take it in the present instance where there is an outbreak of foot-and-mouth disease, that if there was a quarantine station the restrictions on foreign countries in your idea would be enabled to be withdrawn more quickly?—That is my idea.

3054. You do not mean it to be used for all the cattle?—No, because there is a six months' quarantine now, and that might be reduced to two months.

3055. To be used in case of emergency?—In case of emergency, yes.

3056. (*Mr. Bathurst, M.P.*) If used for tuberculosis it would have to be continuous?—The animals that are there can be tuberculed when they are there; it would be a saving of time.

3057. (*Mr. Richardson Carr.*) When they are there for foot-and-mouth disease?—Yes.

3058. But your idea was not to see it as a tuberculosis station alone?—No.

3059. Your idea was that people exporting cattle cannot do it; you think that might be facilitated?—That might be facilitated.

3060. Do you think there would be any difficulty about the fodder question in that case? For instance, the United States: now, of course, the restrictions are

not removed, and I understand from inquiries the other day that when they are removed the cattle will not be allowed to be exported until the fodder has come from America to here for them to eat on their way back. Do you think foreign countries would make a difficulty about having fodder from here?—What I wanted the consultation for was to show that we restrict our outbreaks to one small bit of the country, and that experience has shown that we can restrain the virus from spreading.

3061. And the fodder would have to be dealt with?—The fodder would have to be dealt with.

3062. It would have to be guaranteed, or something of that sort?—But you would not like fodder to come from the Argentine here. While there was an outbreak of disease the fodder could be brought across.

3063. Like they are suggesting to do now?—Yes.

3064. Like what they are saying they will do now; they will not have the cattle over unless they send the fodder. With regard to the Channel Islands; has it ever occurred to you it is rather extraordinary how immune they have been from foot-and-mouth disease, especially considering the enormous number of cattle they keep per acre? They are also in very close proximity to the Continent on the other side. If it were a question of birds doing very much harm do you not think they would suffer? It has been unknown in the Channel Islands for several years past?—But it is perfectly certain that birds migrate to England. I am not sure about the migratory habits; I really do not know whether it is common for birds to go from the Continent to Jersey or not; whether that is not too small a place for them to go to.

3065. Quite apart from the birds?—That is only one.

3066. It is rather curious; I do not know whether the restrictions on ships and everything going to Jersey or Guernsey are more severe than they are for England. All through these outbreaks, Jersey and Guernsey have been immune for many years past?—That is a fact.

3067. And it is a curious thing?—Well, it is not quite curious to me. Jersey is an extremely isolated place, relatively the communications are really very small with Jersey.

3068. Boats are going over from France, backwards and forwards?—From St. Malo. But, comparatively, there is scarcely any intercourse; I believe, for a certain part of the year there is next to none.

3069. I thought there was a good deal?—Perhaps more than I thought; I have not been over there for some years.

3070. It is a curious coincidence that they have not had it over there?—They have only had it once or twice. They are very careful about their cattle.

3071. If they did have it, it would cause great havoc; the cattle are all kept so close together there?—They import no animals into Jersey. Well, taking the size of the area of Great Britain as compared with the area of Jersey, and perhaps there is a smaller intercourse between the mainland and Jersey than there is between England and the Continent, perhaps it is not so very remarkable after all. Still, I think it worth while to make inquiries for the reason of their freedom from the disease.

3072. Ireland, too: Ireland is immune, too?—Now you come to a second point.

3073. What is the reason of that, do you think?—I should like to know exactly, but I think we are the buffer for Ireland in all probability.

3074. We get it first?—We get it first. I do not know whether it has occurred to this Committee or not, but anthrax is very rare in Ireland. One case only has been reported for this year, and while for the decade 1900-1909 in Great Britain 9,131 outbreaks were reported, in the same period in Ireland only 40 outbreaks are reported. Of course, the suggestion is that inquiry might be made as to whether a common cause is in operation in keeping out anthrax and foot-and-mouth disease.

3075. (*Sir Bowen Bowen-Jones.*) Are the cases equally well reported, do you think?—Well, I am afraid I cannot answer that question I am not a departmental officer. They do not always think in official quarters that everything goes into print that occurs in some foreign countries.

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3076. (*Mr. Richardson Carr.*) Does Ireland import any foreign dried hides, do you know?—Well, I think very few.

3077. One other thing I should like to ask you: I think you agree that the administration of the Board of Agriculture in dealing with foot-and-mouth disease is all that we could wish practically?—I think so, yes.

3078. Is there anything that occurs to you, nothing to do with administration; but is there any possible source of risk that you can possibly think of that we could make things more secure for it coming over to England?—No.

3079. You know nothing we could do to give us a better chance of greater security?—Nothing that is practicable.

3080. What is it that is impracticable that you think might be a prevention even if it were not practical?—Well, to say you shall not get anything from the Continent.

3081. (*Mr. Morrison.*) You told us that the virus was obtained from the vesicles?—It is more profuse there; there are larger numbers there than anywhere else.

3082. Does the foot-and-mouth disease germ always occur in the blood?—In the early stages before the vesicle is formed the blood is infective.

3083. In the early stages?—Yes.

3084. But it does not occur in the later stages in the blood?—You cannot produce the disease by using the blood, after a time.

3085. Do you know how long after it ceases to have that effect?—No, I could not say that.

3086. Does it occur in the flesh?—When it occurs in the blood, probably it occurs in the flesh.

3087. Do you think it might occur in the fleshy part of the skin, the hide?—Do you mean to say really in the tissues of the skin?

3088. Yes.—I am not at all afraid of that.

3089. You think not?—No.

3090. So that the hide would never have the infection upon it unless it had come in contact?—That is my view, that it would be contaminated by discharge from a vesicle somewhere.

3091. You think there is absolutely no danger of the hide being itself infective?—I do not think so myself. The word "absolutely" is really one that I cannot bind myself to, because I have never done any experiments of my own, and I do not know if the point has been investigated by experiment.

3092. Then the milk, I understand, is infective?—Yes.

3093. Is it infective through all stages, as far as experiments have gone, right through the illness?—Well, not until the period of incubation is over. From three to five days, according to the gross acceptance of it, probably the milk becomes affected about 72 hours after the infection is received.

3094. Milk then would be a considerable source of danger if it were, say, introduced from France?—Yes; it might be used to give it to pigs wholesale.

3095. I believe that evidence may be brought to show that this milk may come over from France and may be mixed with the home milk in the same churn as English milk, and it may then be sold in London, and that these churns which have contained this foreign milk may then be sent down to the country to farmers in England. Would you consider that a great source of danger?—There is unquestionably an element of danger associated with it. There must be. If these milk churns should be coming from a place where there is foot-and-mouth disease, they have large surfaces, and having been connected with the place, so that there is a great liability of the churn itself being contaminated, and there is also of the milk. But I understand that a practice was adopted during last summer of importing foreign milk and using the churns in which it was imported as receptacles for English milk and its distribution, so that the two lots may possibly be infective, both the English milk and the foreign milk.

3096. Then I suppose you would be strongly in favour of Pasteurising milk from abroad?—I am altogether, on principle. Not a drop of milk should be landed here that had not been sterilised.

3097. You would go the length of sterilisation, that is on account of tuberculosis, I suppose?—Yes.

3098. I suppose the Pasteurising, however, would be sufficient to destroy the germs of foot-and-mouth disease?—Oh, yes; quite.

3099. But sterilisation would destroy the other dangerous germs in the milk?—Yes.

3100. Other diseases possibly?—I think we should be absolutely secure from disease of any kind before we admitted any product. That is really my view, and that there must be some degree of danger always associated with milk. If there is any disease about it is a good medium for the cultivation of bacteria, and that should be kept safe at any rate.

3101. If milk is dangerous it will be dangerous, I suppose, almost always to pigs and not to cattle. Although it might be fed to calves, that is not very likely. Have you any idea what proportion of tuberculosis has occurred amongst pigs as compared with cattle?—No. I believe in this country the order has been more commonly cattle and pigs; cattle first and pigs afterwards, but I see in this article here that I tried to disabuse my hearers of accepting that as a general principle, that it always began in cows first. That was the original idea; that was what I was taught, but I say my experience after 10 or 20 years here led me to make that statement, and to look to pigs as sometimes being the originators of the disease.

3102. As regards the hides we have been talking about, disinfection of the hides is, of course, to get rid of the virus which might come in contact with the hides in handling?—Yes.

3103. Would you not require to disinfect every single hide separately; to open out a bale, spread it out, and disinfect it?—Yes.

3104. Would not that be a little expensive?—Yes.

3105. No other way would be sufficient; that is to say, supposing the virus is only on the outside of the hides, the outside of the hides only would be infective; I meant to say that the bales would have the infection that was really going to hurt us on the outside of the bale and not on the inside. The infection inside the bale would go to the tannery and would not likely come into contact with animals, but the outside might leave this contamination in the hold, or on clothes, or in the railway truck. The point I want to bring out is this, would it be necessary to open up the bale in order to have fairly safe disinfection?—It would be, of course, necessary to open the bale to disinfect the whole of the hides, but without that sufficient disinfection would be brought about by disinfecting the outside if we could be assured that the outsides only were contaminated with the virus. Hides are not always thrown into the pit as soon as they come into a tannery or wherever they are going to be cured.

3106. You think the bale would be a source of danger suppose the infection was only in the inside of the bale?—They would be a possible source of danger.

3107. I would say the principal?—A very small source of danger.

3108. The real danger would be on the outside of the bale?—Yes; it does not look a very complete process to me to just touch the outside with the disinfectant and let the inside go free.

3109. I wanted to get at your estimate of the comparative greatness of these sources?—I do think that the outside is much more liable to provide germs which will come in contact with susceptible animals in this country.

3110. You do?—I do not think there can be any question about that, because there will be many chances that the inside would not come in contact with animals in this country.

3111. Would you have dried hides disinfected as much as the raw hides?—I would have all the hides disinfected.

3112. You think they are equally dangerous?—I should not like to say that from a scientific point of view, because we know that dessication is very deleterious to the germ of foot-and-mouth disease, that is one thing we do know, and they retain their activity and power to introduce the disease longer if they are in a moist state.

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3113. I wanted to get that, because of course a very important point is to have as little disturbance of trade as possible and cause as little interference as possible?—I quite appreciate that.

3114. If the dry hides were comparatively safe they might be in a different position from the salted hides?—Yes, but I am afraid, before you can arrive at a sufficiently sound basis on which to formulate any laws on that point, it will be necessary to carry out further experiments. If the outside of a bale of green hides is liable to have deposited on it the virus of this disease the outside of the dry hide is also liable.

3115. So that really, in the present state of your knowledge, you are not prepared to say definitely either one thing or the other?—I am not prepared to say I would exclude from the operations of any Order dry hides, while I would put an embargo on the moist hides.

3116. That is a subject upon which you would like further experimentation?—Yes, certainly before I could give an opinion.

3117. And as regards the calves in their skins, do you know whether these are inspected on coming to our shores or not?—I believe they are.

3118. They are inspected, of course, by the medical officer of health, who pronounces them fit for human food, but does a veterinary surgeon inspect these; you do not know?—I do not know.

3119. (*Mr. Field, M.P.*) They do not generally come to London at all; they generally go to Harwich?—I believe that is so.

3120. (*Mr. Morrison.*) Supposing they did come in?—Well, the Chinese pigs come under the medical officer's eye, and if he thinks requisite they come under the veterinary surgeon's eye. I am not sure about the calves; I cannot give you the information you wish on the other.

3121. But can you give us an opinion as to whether, with the object of safeguarding the country from foot-and-mouth disease, you think it would be necessary that calves coming in their skins should be inspected on landing by a veterinary surgeon?—Well, they ought to be inspected by an expert. They ought to be seen by somebody who is capable of safeguarding the public health and the health of our live stock. I leave you to judge whether it is veterinary surgeon or medical officer of health. The medical officer of health might not believe me if I said a veterinary surgeon was the man to do both.

3122. Supposing they said an expert in that disease, you would agree that ought to be done?—Yes.

3123. Well, that ought to be a simple matter to arrange, ought it not?—Yes, but it would be another point of view to the public health, I presume.

3124. It would be merely, of course, in connection with foot-and-mouth disease; an expert, I do not care whether he is a medical officer of health or whether he is a veterinary surgeon, if he is an expert in that matter?—I prefer myself to give an affirmative answer with the use of the word expert.

3125. Do you think that would be quite an easy matter to arrange; there would be no difficulty about arranging that?—I really have not sufficient knowledge of the trade. I know there is a large trade in calves' and sheep's heads, which amounts to a very large figure annually, but I really cannot give you, I think, very much information on that point from my own knowledge.

3126. Then, in some cases these calves bring a label with them, but in some cases they do not. Would you think it advisable to insist upon all calves being bound to have a label certifying that they came from a farm where there was no disease, and certifying that they had been inspected and passed on the other side before they were allowed to be shipped?—A Government certificate of freedom from association with disease?

3127. Yes?—I think that is advisable; it is done now, I think.

3128. In some cases it is done?—It is done in Holland; all the Dutch stuff that comes, I believe, has that label.

3129. It is done, I believe, in scheduled countries,

but I do not think it is done in non-scheduled countries; it is not done always. Now as regards the matter of research. Would it be a possible thing to work with other countries, say, to have a grant of money given, along with Germany or France, in carrying out research in one particular part, say in an island somewhere, or at some station somewhere. Would it be possible, do you think, to arrange for International research?—There is nothing to hinder that except possibly human temperament.

3130. Would that, to your mind, be preferable to work that was carried on entirely by Britain?—Well, the positive result or the negative, the real results probably, would be accepted more generally by both countries. Supposing Germany and Great Britain carried on experiments, and they came to the same results, and there was joint management in carrying them out, both Governments would be bound to receive those on equal terms; it might be preferable in that way, but whether the experiments would be advanced or not by being done in the two countries I really could not say; I have never considered that.

3131. I was thinking of an experimental station which would be worked by several countries?—I may say that is my ideal for all these matters of a universal bearing, that they should be studied from the point of view of general extermination; there are common enemies, and there ought to be a joining in common action taken in trying to exterminate them, especially when one country cannot keep itself free on account of what goes on in another. The principle I certainly agree with, but whether it would work out in practice I cannot tell. But I see no reason why it should not.

3132. I believe some investigation is to be carried on in India. Is India ever free from this disease?—Never, I believe.

3133. Would India not then be a possible place for a permanent experimental station?—Not on that ground alone.

3134. But it would be a possible place, seeing that, if the country is always overrun with the disease, it would not matter so much if it did escape. I am asking you just now whether it would be a possible idea?—It is only on the word "permanent" that I could not see my way to answering you positively; more or less permanent, I suppose, you really mean?

3135. I mean for some years; I do not mean for a couple of months?—You do not mean for ever?

3136. No, nothing so lasting as that?—An experimental station established with the view of getting rid of foot-and-mouth disease in India?

3137. No, with the view of increasing our knowledge?—Well, the use of the knowledge would be to exterminate the disease.

3138. I was not thinking of India; I was thinking of this country?—I think we should get advantage from any work which was done in the way of research, even in India; and, I think, very little short of full advantage.

3139. That is to say, you think it would be quite a feasible thing to consider the establishment of an experimental station in India?—Yes.

3140. Would you prefer that on other grounds to an experimental station or an island nearer our own shores, say, Lundy Island?—Well, I have not given consideration to that. Lundy Island just occurred to me for the moment. I have no special predilection towards that island as an experimental station. You might think, though, I had been laying out some schemes for it, but I really have not.

3141. (*Mr. Field, M.P.*) You think that under present conditions you would practically have no safety from an outbreak so long as the disease was rife in the Continental countries?—That is so, sir.

3142. You agree with the idea, I think, I threw out first at this Committee that by consultative co-operation between the countries the danger might be minimised of spreading the disease in those countries and of infecting our country?—No harm could be done by that consultative attitude, and good must accrue from it if anything does. That is my view.

3143. I take it your idea is that we ought to have

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an amicable conference with a view to common action in respect to stamping out this disease?—That is so, sir.

3144. But, of course, you consider that our methods cannot be adopted where there is an enormous outbreak?—Not the present methods.

3145. I mean the present methods, yes?—No, they could not.

3146. Because the financial cost would be too great?—That is so.

3147. I remember the former outbreak in Ireland 29 years ago. Of course, all the cattle then could not be killed, because it would have decimated the live-stock supply, and the Government could not afford to pay the cost?—That is so.

3148. Your meaning is that if that condition exists now on the Continent that method is not available?—Our present method is not available.

3149. I take it that your idea of safeguarding, as far as possible under present conditions, is the speedy discovery and notification of the disease to the local authority, and through the local authority to the Board of Agriculture?—That is the spread of the disease, not the outbreak of the disease. It absolutely depends on that, I think, as to whether it is stopped after short notice or not.

3150. Are you of opinion that it is not spontaneous or indigenous to the three kingdoms?—Very strongly, sir.

3151. You are very strongly of that opinion?—I am very strongly of the opinion that it is not indigenous.

3152. That it was introduced from a foreign country and kept up ever since by means of these infective agencies which are so dangerous?—But I think it has been entirely eliminated from this country so as to be as exotic as the llama is to this country, and it has been absolutely extirpated, and when it has re-established itself the virus has been brought from a purely foreign source.

3153. In view of the fact that was given in evidence to this Committee of a difference of opinion existing between certain veterinary surgeons, would you be in favour of a post-graduate degree being granted, or a qualification rather for the officials of the local authorities?—I do not think you were here when Mr. Nunneley asked me the same question.

3154. Well, a good thing cannot be repeated too often you know?—I was going to say, if you will allow me, that is another question; this is one of degree and Mr. Bathurst's was one of course. I agree with the post-graduate course, but I am very jealous of a post-graduate degree, because I want to raise the standard of the whole profession, that every man may be able to deal with these contagious diseases, because it is not the inspector that it depends on so much. He has got certain lines laid down for him; he must work on instructions, but it is that the whole profession shall be capable of appreciating this thing at once that I so much look to have benefit in the future. The general standard, the graduating standard, if necessary, should be raised to that point.

3155. I agree with you, but then the financial difficulty comes in. If you want travelling scholarships every man cannot afford that. Now I happen to be a governor of the Royal Veterinary College in Dublin, in fact I am one of the founders of it, and that is the reason why I take such a keen interest in these things, and I know that many of our scholars could not do that, but I do make the suggestion to you that the veterinary surgeons upon whom the responsibility would rest of absolutely declaring in the first instance respecting the notification of the disease or discovery who are in the employment of the local authorities, should in my opinion have this qualification?—I agree that they should have every qualification, sir, but I should like that impressed on the Committee very strongly, that if there is a need for superior education it is a need on the part of the general practitioner. I do not say there is a need for improved education; I should not like to say that.

3156. You are too guarded; you are an official?—I am not an official, sir. I am like yourself in that one respect, a private individual, absolutely cut off alto-

gether from exclusive consideration of an isolated portion of the community. But the notification of the disease in this country largely depends on whether every ordinary veterinary surgeon is able to diagnose it. He knows that his duty is, either to report himself, as he must do in foot-and-mouth disease, or to get the owner to report it immediately. When the horse is out of the stable with foot-and-mouth disease the danger is abroad.

3157. Yes, that is right?—But if you get a general practitioner to shut the stable door while he is telegraphing to the Authorities to put the legal safeguards in operation, then the situation may be saved. And that is my position with relation to this postgraduate system. I want the graduates to be educated; if it is necessary to do so I want the graduate's education raised to a higher standard and I am very chary about any special degrees.

3158. But would not that be more or less a question for the profession as well as for us?—Both; for the profession to consider.

3159. Do you not think that the profession would imagine that it was a case of gratuitous impertinence, almost, on our part to lay down certain rules which they ought to follow in respect to their own particular profession?—Possibly. It is a very small profession, probably not immune from the eccentricities and conceptions of injustice to which diminutive bodies are susceptible; they are a little ego.

3160. The smaller they are, the more touchy they are. A six-foot man will not mind what a four-and-a-half foot man would say?—No.

3161. Do you think an experimental station in India would suffice to give us the information that we require in view of the fact of the difference of the cattle; that they had partly become immune?—That would have to be taken into consideration.

3162. Owing to the continuation of the disease, the difference in climate, and the difference in breed?—These matters would all have to be considered, but if an experimental station were established in India there is no reason why they should not import cattle for experiment.

3163. From us?—From us, or from anywhere they liked; send out to the Argentine for them, anywhere they liked.

3164. Yes; we could get them from the Argentine; they have plenty of them there. Now with regard to this disinfection of hides, could not the hides be disinfected either at the port of embarkation or at the port of landing?—I think it is better at the port of embarkation, because nothing is contaminated in the ship afterwards, by them at all events.

3165. That is my idea, too. Well, it is the Customs that would have to make that regulation. Now with regard to hay and straw I just want to draw your attention very briefly to what to my mind is an extraordinary anomaly. We forbid hay and straw coming in from infected countries, but we allow hay and straw as a portion of packing for furniture and various other things. Have you any knowledge—being a port inspector you must have some knowledge, because these things come in the ships along with the hides and other things you have had to do with—do you think if there was a law made or suggested—we are not going to make laws; they are not made so easily in the present state of things; it is a difficult thing to make a law—do you think we would be able to carry it out and put wood-wool or something of that kind as a substitute? I know it is a large question but this is a large issue?—I think it is a question which must be answered with a qualification. If the wood-wool is not likely to be brought into contact with the disease on the other side, of course wood-wool is safe, but if these things are going to be packed in a place where the disease is rife the wood-wool is likely to be contaminated there.

3166. I only speak as a layman, but I think the wood-wool is not at all as dangerous as a mechanical carrier of infection, as hay or straw. In the first place the cattle would not eat wood-wool; they are not such fools?—Cattle are very stupid, sometimes, you know.

3167. So are men, too, occasionally?—But a pro-

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portion of cattle like hobnails; you may not know that occasionally they try to swallow a whole umbrella.

3168. Or a boot? Now, one question more. If your theory—I do not know whether I should call it your theory—but the suggestion that the virus only lives for a certain time is correct, how can it be explained that the disease has been carried as suggested in several cases here through the hay and straw, and has gone down to the country and must have been a long time in pasture. Have you any possible explanation of that?—I should like to hear the first part; your qualification of your question; it rested on something which I did not catch.

3169. We have cases here where it was suggested that the disease was imported into this country through the medium of hay and straw that was used in packing; my process of ratiocination is this, that that must have taken a long time to get there?—That took five months.

3170. I could not say the time?—That is pretty well known if you will refer to the Edinburgh outbreaks.

3171. Then the virus must live for that length of time?—Yes; but I am not bound to accept it on the grounds on which you put it. I am not sure that the hay carried the virus. That has never been proved. If experiments, as suggested by Mr. Bathurst, could have been carried out, that might possibly have been proved long ago.

3172. That is the very point we want to get at. That gets us back to another point then, that you must have more experiments before you are able to give a definite opinion; is not that right? As a member of this Committee—I am sure my colleagues agree with me—I want to make some practical suggestion when we are done and, apparently, we are all groping in the dark. We cannot get anything like definite information from anybody, particularly from professional men. They are so guarded in their replies that really they are like the Delphic Oracle, you can interpret their replies one way or the other just as it suits your frame of mind. Do you understand me?—I am quite conscious of my small illuminating capacity, if that is any suggestion.

3173. I beg your pardon, Professor, I am not making it personal at all?—Not at all.

3174. You are all in the one bunch; it is just the stamp; I would be surprised if you were different from your brothers. I suppose I am peculiar; I do not know whether the Committee agree with me or not?—You have all been very kind to me.

3175. I do not know that I have anything further to ask you except one question, and that is about the radius that Mr. Bathurst was a little bit curious about. So am I. We are all inquisitive here, you see. You fixed on the 15 miles as what may be called a comparatively safe area, but I understand that is not what is called a hard-and-fast cast-iron rule?—That is not in my mind.

3176. Nor in the minds of any of the gentlemen who come before you; it is largely determined by whether markets are within the area, or the line of country; whether it is mountainous or separated by a river or something of that kind. What may be called the geographical features of the country, is not that so?—That is so.

3177. But you would take the 15 miles radius as a necessary limit?—I do. I think it would be hazardous to try anything less; while we are successful with this. In doing this I think we ought to realise what a general outbreak of foot-and-mouth disease means to this country, and it is only those who really have an experience of it who can appreciate it in any way.

3178. I am entirely with you, because it was near breaking me.

3179. (Mr. Richardson Carr.) Regarding the experimental station, do you not think if one were established at Lundy Island, or anywhere off Great Britain, the effect of establishing an experimental station would make all foreign countries unwilling to take cattle from us?—I really do not know that; I think it would be possible to safeguard stock on the mainland, even against foot-and-mouth disease.

3180. But do you think we should satisfy them? Do you think that if we established practically a constant centre of foot-and-mouth disease—because there would have to be communication with the mainland—the foreign countries would still take our cattle?—I think they must realise that it is possible to limit foot-and-mouth disease under such special circumstances yourself, and everything about you.

3181. There are some countries that are not very anxious to have our cattle, we know?—I thought they were generally.

3182. Well, some countries are not very easy; the rules are not so easy as in other countries?—No.

3183. Do you not think they would be very unwilling to take our cattle if once we established a constant centre of foot-and-mouth disease?—I dare say it might be used as a weapon, but whether it could be justifiably done is another matter. At any rate, the safety of our own flocks and herds must be our first concern.

(Mr. Bathurst, M.P.) Do you not think that if we were to balance in their eyes such an experimental station, with a quarantine station through which all animals had to pass before exportation, their fears would be entirely removed?

(Mr. Richardson Carr.) You mean a constant quarantine station; a permanent one.

3184. (Mr. Bathurst, M.P.) Yes, a permanent one?—I am afraid the stock-owners on this side would have to think about that a little. I have not thought about it; it is rather a difficult question. It is doubtful if the stock owners of this country would regard the possible benefits of an experiment station equivalent to the cost and annoyance entailed by permanent quarantine.

3185. In that connection, may I ask you whether you know that the Departmental Committee which sat under the chairmanship of Lord Strachey last year reported in favour of a permanent cattle-testing station, to which all animals required for export should be sent and tested by the tuberculin test?—No, it has been talked of, but I am not quite sure whether they reported absolutely in favour of that or not.

3186. I understand they did?—Mr. Richardson Carr was on that committee.

3187. I want to follow up Mr. Richardson Carr; bearing that in mind, may it not be desirable to have such a permanent quarantine station, mainly for the purpose of applying the tuberculin test for animals to be exported, that can also be utilised for the purpose of securing immunity against foot-and-mouth disease?—Of course that was in my mind when I made the suggestion.

3188. Yes, but the permanency of it?—The first thing was that I thought this might be tacked on to tuberculin, as there was some idea of that being established, but I think it would be worth while having the quarantine station, if we could get foreign Governments to see as I see, independent altogether of tuberculin. A tuberculin station, of course, is another matter. That would probably be regulated by the officers of the Governments which accepted the animals.

3189. I wanted to go a little further than Mr. Richardson Carr, my sole point is, bearing in mind the enormous importance of our foreign trade, of being able to sell animals that are certified to be free from tuberculosis, may it not be desirable to have a permanent quarantine and testing station, which can also be used for the purpose which you have suggested to this Committee?—That was my idea, that the establishment should be there, at any rate, the building should be there, whether we had foot-and-mouth disease or not, and could be used if foot-and-mouth disease occurred, and that in the meantime, if there was this call for a tuberculin station, that it should be used for tuberculin. But tuberculin stations may be used by the servants of the Government, and the tuberculin test is carried out by the servants of the Government who are importing the animals.

3190. I do not happen to know the exact form of the Departmental Committee's report, but surely it is inconceivable that they intend that there shall be servants of all the different countries that are importing and will import our pedigree stock in order to test those cattle?—They exist now.

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3191. They exist off their own shores now?—They exist here; they exist in Great Britain.

3192. We know that, their agents?—Their agents.

3193. Like our friend Mr. Cassars, they satisfy themselves the test has been applied, they insist on the test being applied; but, I take it, in the case of a stock-testing station, as contemplated by the Departmental Committee, the responsibility would rest with the Government of this country?—I am not sure that even the responsibility for carrying it out might not. You see the other Governments want a double guarantee. Heretofore they have had animals with certificates of English veterinary surgeons as being free; they have reacted when they have got out there. I may be wrong, but I understand the foreign Governments desire to be assured by their own expert advisers that there is no danger likely to arise from admission of the stock into their countries. At present they obtain this assurance by testing in quarantine at their ports of debarkation. I take it we say: "We will provide you with a place. You have your own veterinary surgeons to carry out the test. All we breeders want is a certificate of freedom, and our money down."

3194. (*Mr. Field, M.P.*) That is to say they have not sufficient confidence in us; they want one of their own?—That is the idea, as in relation to testing horses for glanders, the Irish Department appoint their own veterinary surgeon to carry it out in this country.

3195. (*Mr. Bathurst, M.P.*) What I meant was your suggestion of a quarantine station; if unfortunately, or fortunately, we are recovering from an attack of foot-and-mouth disease; but do you think the quarantine station would meet the case. You mean a quarantine station after we had experimented with foot-and-mouth disease to enable the embargo to be removed earlier?—That is so, but it is not necessary to wait for experiments to be carried out.

3196. It is a very different thing to have a quarantine station when we have a constant case of foot-and-mouth disease which we are breeding altogether without thinking what foreign countries might have done. They might be content when we have done away with it, but would they be content when we are breeding it?—I do not think they will.

3197. I want to bring you back to the foot-and-mouth disease as regards the experimental station, and I want to ask you would it not be safer on all grounds that we should have an experimental station, say in India, rather than that we should have one at a place like Lundy Island or some place close to our own shores; that is the point I want to get at from you?—I am rather afraid that what Mr. Richardson Carr has intimated would occur here, that foreign Governments

might not accept this as a free country if we had an experimental station in Great Britain.

3198. There is one other question; I think Mr. Nunneley or Mr. Morrison asked about milk sterilisation; does sterilisation of milk deteriorate it?—I think not.

3199. It does not?—Well, that is an answer of my own, which possibly requires some qualification. No milk has ever been drunk in my house that has not been boiled; my family and many others have been brought up on milk that has been boiled, fortunately without the aid of any medical man, but there is a difference between boiling and sterilising milk, to which I refer. Sterilising, as far as it means killing the virus of foot-and-mouth disease and tuberculosis by heating, can be carried out without coagulating the albumen and precipitating it and the milk salts, and so affecting the nutritive quality of the milk. Such sterilising, in my opinion, and I think in the opinion of a large number of people, I think the majority, does not deteriorate the milk.

3200. There is one other question and that is all, and I have done. As regards these veterinary surgeons of local authorities, would you not approve before they are appointed by a local authority that they should be approved by the Board of Agriculture; their appointments; like they approve, as you know, now all their veterinary officers in different districts?—Yes. It would be putting rather much in the hands of the Board of Agriculture in discriminating professionally.

3201. Approved by Camden Town, if I may say so?—Oh no, sir.

3202. You would not like that; I thought possibly you would?—No.

3203. You think it would be putting too much in the hands of the Board of Agriculture, then?—Yes, I am afraid it would.

3204. (*Mr. Field, M.P.*) What would the local men say if you took the appointments out of their hands. I am looking to the susceptibilities of people?—Of course my view is to educate as far as possible up to a certain standard, and even if the Board of Agriculture has the approval they may allow weak men in sometimes. The danger of a Department giving approval is that the local authority has to consult the higher authority before they can discharge their officer. I have never heard of it happening with the Board of Agriculture, but dealing with Local Government Board approvals you may find you are saddled every now and then with an inefficient person whom you cannot get rid of.

3205. (*Chairman.*) Well, thanks very much; I am afraid we have kept you rather a long time?—I am afraid I have given you long answers, sir.

The Witness withdrew.

Mr. RICHARD WAITE, J.P., County Alderman, Duffield, Derby, called in and examined.

3206. (*Chairman.*) You are the Chairman of and represent the Executive Committee of the Derbyshire County Council, I believe?—Yes, sir.

3207. And you have kindly come to give us evidence here. You are a farmer yourself?—I have been.

3208. You are not now at this moment?—Only to a very small extent.

3209. And you were closely in touch with the outbreak at Hallam in your county, were you not?—Yes, I have been with all the outbreaks of disease for a good many years in Derbyshire.

3210. But more especially I should ask you about this one at West Hallam in Derbyshire?—Yes.

3211. Now, will you tell us your views about that outbreak?—I think that everything possible was done by the Board of Agriculture to stamp out the disease in the quickest and the best manner, but I thought that the district which was put in that case—about 12 miles radius—was a very large district at a very unfortunate time to prevent farmers moving any of their stock.

3212. Was that the view of your committee? I am bound to tell you this, that I do not think this question—although a few questions have been asked about it—comes within our reference; I think it is a pure question

of administration by the Board, but at the same time, as you have kindly come up, of course, I agree to hear your evidence upon it. Was your committee unanimous on that, may I ask? Was it composed of farmers mostly, the committee?—Oh, a good many of the members are farmers, and some large farmers; one a farmer of 1,000 acres.

3213. And there was a feeling in yourself and among the majority of your committee that the area was excessive?—Yes, especially in such a very hilly country as that is too, and some of us, myself included, have had the foot-and-mouth disease on our farms, and it seemed such a very large district to anything which we were accustomed to when foot-and-mouth disease was rampant I may say among us.

3214. Have you ever had foot-and-mouth disease on your farm?—Oh, yes.

3215. How many years ago?—I have my diaries here showing that it occurred all round me in 1874, but I did not have it then, and I did have it in 1875, but I had it in other years since, between 1875 and 1890. I only mention 1890 because that is the year when I gave up active farming.

3216. That was the time when foot-and-mouth

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disease was very rampant in this country?—Yes, it was.

3217. What were the areas at that time?—There were none; none whatever.

3218. No, it was when there were big outbreaks?—You simply gave information to the police and that is all that happened.

3219. Have you any sort of idea which you could give the Committee how this outbreak originated in West Hallam?—I have tried to find out and I could come to nothing definite. My own personal opinion was when it was first brought out, knowing the farm pretty well—it is within seven or eight miles of me—that it may have lain dormant in some of the old buildings, but then I was assured that could not be. Then I thought it was possibly from milk. I would like to say about the foreign milk, I know that our churns when they go up to London are used by milk dealers for other milk than the farmers' own milk, and then in late years many milk dealers have found their own churns and sent them to the farmers, but they never send them washed. Now it occurred to me that they might easily use those churns for foreign milk, and, in fact, it has been said that they do make English milk of it at once by putting it in the English farmer's churn. Now when that churn is sent back again, and it is not washed, there is always some little milk in it, might not that be a very possible source of contagion?

3220. Had this occupier of the farm at West Hallam been sending milk up in churns?—Yes.

3221. He had?—Yes.

3222. He had been doing it regularly for years?—I could not say. I believe so. You see he was close to the station. In fact, everyone now in Derbyshire sends his milk by rail; it is the only way to make ends meet.

3223. Did your committee or the veterinary surgeons of the local authority go into the whole question of what was brought on the farm as regards feeding-stuffs and all that kind of thing?—No; our local man had nothing to do with it.

3224. It was left entirely to the Board of Agriculture?—It was left entirely to the Board of Agriculture.

3225. Had you any idea of anything coming on to the farm at all?—We could not make out that there had been fresh beasts of any kind, or make any suggestion from anything which might arise from the farm.

3226. Then, with the exception of the area which your committee took exception to, the size of the area, you have nothing but praise of the way the Board of Agriculture carried out the work at that outbreak at West Hallam?—Nothing but praise. May I say that the farm is subdivided by the Great Northern line, and when we were there we could not help but think that possibly there may have been something brought on the line which may have been the cause of infection, because the pasture fields come up to the line on both sides; in fact it is all pasture there.

3227. Had there been an outbreak on this farm before at West Hallam?—The farmer said yes, about 30 years ago.

3228. Have there been any cases of foot-and-mouth disease in the county of Derby in the last few years?—None; not certainly since 1889.

3229. And yet, I suppose, all that time—it is a good many years now—the farmers have been sending up their milk to London in churns?—Regularly; but, still, there has not been foreign milk imported until the last few years in any quantity.

3230. A little more than six, is it?—It may be; time slips away very quickly; a few years.

3231. (*Mr. Field, M.P.*) Have you formed any opinion other than with regard to the milk, as to how this outbreak occurred?—No; none whatever.

3232. Was there any hay or straw used for packing, or anything of that kind brought down?—One knows that so many things that you buy are packed in straw, and one has found straw taken from one package and used for another. Say you go into an ironmonger's shop; they pack you up their things in straw that they take from these foreign packages.

3233. Were you able to trace any of that foreign

packing coming on that particular farm?—No. I do not think anything was possible in that way. I frequently burn that packing hay myself sooner than run any risks with my cattle. I keep Jerseys now.

3234. Were there any men or dealers came from a foreign market?—There are no foreign dealers attend Derby market.

3235. No; I thought not myself?—No, sir.

3236. So that you have no theory to put forward to this Committee except the milk?—No, sir; I do not think I have anything whatever. I met the Chief Constable there and I met one of the inspectors of the Board, and we questioned everybody and tried to find some cause, but we utterly failed.

3237. Well now, have you any theory of your own regarding this foot-and-mouth disease, how it is brought in, from your experience before? You are old enough, like myself, to remember the former outbreak?—Yes.

3238. And you suffered a good deal from it?—I had it. I cannot say I suffered very much. I was fortunate when I had it; I never lost a beast, and they were not many days before they were well again. I put down in my diary in 1875, and I have the diaries here if you like, when the beasts were attacked and what I did.

3239. What did you do now?—I simply put them in a building by themselves and went on selling milk just the same.

3240. And gave them dry-feeding, of course?—I had one man to attend to them. But it did not stop me from selling my milk; sending it away to London or wherever I was sending it.

3241. Did it spread amongst all your cattle?—No, when I have had it I have never had more than six or eight affected at the time.

3242. And how many cattle had you on the farm at that time?—I used to milk about 25 and I had perhaps 12 or 14 young stock cattle.

3243. They were inspected and you separated them immediately they showed signs of foot-and-mouth disease?—Immediately they showed signs of foot-and-mouth disease, I sent them across to a separate building about 80 yards away.

3244. Which had no communication with the other?—No; and the man attended to them only.

3245. You were careful not to have communication?—Yes.

3246. Had you any idea at that time how the disease came to you; was it near you?—The year before I caught it there was one field in the middle of my farm; I was on both sides of a road which is a good deal used, and one field that abutted on that road was occupied by a butcher. I have a note in my diary that he had got foot-and-mouth disease in that one field.

3247. From cattle that he had bought, I suppose; that he was going to kill?—I suppose from cattle that he had bought. I could not say about that, but he had got it in that field. The field has been for years now in my occupation. He was a tenant of mine. I never had it that year. That field was within 150 yards of my homestead.

3248. Did your cattle mix with his cattle there?—My cattle must have gone all round them.

3249. But not mixed with them?—No, not mixed with them. It was his own field, and, of course, I should never go near that field.

3250. I understand; I had a field of that sort myself and that is the reason I ask, because it would be very unusual that your cattle would mix with his; you would never disentangle them again. That would go to prove that the contagion could be carried by the air just across the ditch or the zebra, I suppose? You have no difficulty in recognising foot-and-mouth disease?—Not the slightest.

3251. Is it your experience that it is a difficult disease to recognise and diagnose?—Well, I have heard mentioned in the room to-day about small-holders. I am a good deal interested in that. I am the vice-chairman of the Small Holdings Committee. I think probably our small-holders would not know, but anybody who has once seen it and seen how the animals stand and the saliva running down—

3252. And the noise?—The peculiar noise of the lips.

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[Continued.]

3253. You would have no difficulty in saying?—Not the slightest.

3254. Although you are not a veterinary surgeon?—No, I am not a veterinary surgeon.

3255. (*Mr. Bathurst, M.P.*) I understood you to say just now, Mr. Waite, that you think that tradesmen sometimes use the straw which has come in a packing-case, possibly from abroad, themselves for the packing of their own goods?—And send them away in the same straw.

3256. Have you in mind any articles that the tradesmen might send in that way on to a farm or into a farmhouse?—They have come to my own place and, as I say, I burned the straw in my yard.

3257. But, I suppose it is conceivable that many men, not so wise as yourself, might use the straw, at any rate, for litter?—Oh, certainly; I have seen it done.

3258. And you think that is a possible source of the disease?—I do think it might be.

3259. There is only one other question I desire to ask you with regard to the churns; are your churns kept for some time by the London dealers?—Sometimes they have been for months. We have been obliged to form the Derbyshire Dairy Farmers' Association. That was some 30 years ago. I used to be the chairman of it; I have always been a member of the council. They kept them so long that we could not find churns in which to send the milk away, and they used them for their own milk. We appointed our own inspectors, whom we paid ourselves for years, to see that they did not use those churns for anything but our own milk, and to see that our churns came back promptly.

3260. And you suggest that is being done now?—It is supposed to be done; I cannot prove it. Certainly churns are still used. But I do think that when a milk-dealer finds his own churns and sends them to many farmers, that is part of the contract; it is part of the contract that he supplies churns for the conveyance of the farmer's milk, that he might use those churns for foreign milk and actually send the churn empty back, but with some of the foreign milk adhering inside and at the bottom, that might be a source of contagion.

3261. Is it still a complaint in your district that churns are kept unduly long by the dealers?—Not so much now, except that the trade is very bad, and then there is always a difficulty in getting churns back. When trade is bad they would like you to do anything with it sooner than send it at the present time.

3262. Well, your fear is that the dealers who keep a limited number of their own churns in order to send out to their customers may occasionally take your churn, take the dairyman's churn, and use it for their own purposes, and then send it back with a residue which contains possibly, to some extent, foreign milk?—Either their churns or the farmer's churns. We know that they have used the farmer's churns very extensively for their own purposes and that other milk has been in them.

3263. (*Mr. Richardson Carr.*) Did this farmer at West Hallam ever have any manure from the town of Derby?—I think not in recent years. That was one point that we attended to. But Derby is perfectly free, so far as we know.

3264. What I meant was, the straw that is used for packing. No doubt the farmers in the district do take the manure from Derby on to the farms; it must go somewhere on to the country?—A good many farmers.

3265. So it is possible some of that packing straw might find its way on to the farm in that way?—Yes, it might do.

3266. As far as you know would there be any objection by your local authority to the appointment by them of a veterinary inspector, being subject to the approval of the Board of Agriculture?—I think we should welcome that; I am almost sure we should, because it would be a satisfaction to know they were really well qualified. We have no means of testing that.

3267. Do I understand you to say that you think

it likely that this outbreak was due to the milk left in the can?—I could not say that; I only say there was a possibility of it.

3268. In this case?—It might be in this or any other case; it is impossible to say what was the cause of it.

3269. Did the outbreak occur amongst pigs or cattle in this case?—I think there were a few pigs on the farm, not very many. The dairy farmer cannot keep many pigs when he is sending his milk all away.

3270. I wanted to get out whether it had occurred first amongst pigs, because in that case you probably would blame the washing-out of these cans?—No; it occurred among the cattle first.

3271. (*Mr. Hinds, M.P.*) Do you know how long this milk was sent to London? I suppose it was sent after the affected animal was found, after the farmer found that the cattle were affected?—I used to send my own milk regularly. We were not stopped, provided you only sent from the sound animals.

3272. You do not know what the farmer did in this case?—No, I could not say.

3273. I see it was an isolated case?—Yes.

3274. Do you know how long, after he saw the cattle were affected, before it was reported?—I think within two or three days; I could not say exactly that.

3275. Did this farmer know it was foot-and-mouth disease?—He had never seen it before. I asked him. I think he said either his father or his grandfather had had it.

3276. Did the local veterinary surgeon know it there?—He was not called in.

3277. It was reported to the Board direct?—It was reported at once.

3278. In your opinion, the action which the Board took in regard to this case was effective in keeping the disease in check and isolating it?—Nothing could be more effective. They did everything possible to make things go pleasantly and to give as little inconvenience as they could. There was only one man who at all lost his temper over the restrictions, and I did not think very much of that. I thought there was no necessity for it. The inspectors, the officers of the Board, and everything went as smoothly as possible, only that the district was so very large. I do not suppose you would know, but take West Hallam, at about 250 feet above Ordnance, perhaps. Well, that district, in many places, was over 600 feet high above Ordnance—650 feet—and I do not think it would be possible for the contagion to be carried such a long distance. At that time there was no pasture on the fields. We had no sooner mowed our hay and got it than we had to be cutting the stacks. When you could not move an animal at all, it was a very serious inconvenience, and some of us thought whether it was not really a little bit worse than the disease itself.

3279. (*Mr. Field, M.P.*) The cure was worse than the disease?—Well, all the restrictions became rather expensive. Of course, during the past year, farmers have had a desperately bad time. They have had to feed in August and September, just the same as they would do at Christmas, and, unfortunately, there was a very poor demand for milk.

3280. They had not any milk to sell?—They had more milk than they could sell. Probably the milk trade, at the present time, is worse than it has been for years.

3281. Is that owing to foreign importation?—I would not say that altogether, but it is in a great measure due to strikes. Whenever there is any trade upset, then immediately the milk trade goes down. When trade is good the milk trade is good.

3282. (*Mr. Hinds, M.P.*) You think that the Board is justified in taking all these actions with regard to slaughter and other matters, knowing how dangerous the disease is in this country?—For years we asked that the Board should take in hand the responsibility, and that they should compensate. For many years they did not. Soon after we were formed into a county council, we had at one farm at Walton-on-Trent between 60 and 70 beasts, all feeding, and pleuro broke out. We had the whole of these beasts to slaughter. It would be about 1890 or 1891, Warren Farm, Walton-on-Trent.

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[Continued.]

I went over and we slaughtered all these beasts. The sound ones we sent up to London. It was in July, it was very hot. The meat was bad when it got here, and it cost our county council over 1,600*l.* compensation. We had to pay the whole of it then, and for a long while afterwards, whenever we had meetings of farmers, they were always saying that the Government should undertake the management of these things, and they should pay compensation. Well, now, they do pay compensation, and it would be most unreasonable for our farmers to object to the Government undertaking the necessary precautions in stamping out the disease.

3283. Do you think, as a practical man, in Derbyshire, that the Board of Agriculture could take any other precautions more than they do at the present time to stamp this disease out?—No, I only thought they took too many precautions by fixing too big a district, and, beyond that, I would not like to say one word that could suggest any dissatisfaction in Derbyshire.

3284. (*Mr. Nunneley.*) Do you know who it was that first suspected that this was foot-and-mouth disease at this outbreak?—I do not. At the time I was not at home, and they had to communicate with me by telegram. No cattle sale could take place unless I wired that it might. My committee gives me authority to act when they are not sitting.

3285. I was wondering who first reported it to the Board. You say the farmer did not call in his veterinary surgeon?—I do not know what the farmer did, but out local authority did not call in the veterinary surgeons.

3286. I understood you to say the farmer did not call in the veterinary surgeon?—I am afraid I misunderstood the question; he may. I do not know about that.

3287. You do not know who first reported it to the Board of Agriculture as a suspected outbreak?—I have no doubt it would be Captain Holland, the chief constable.

(*Chairman.*) I think I can answer that question. The outbreak was reported by the farmer's own veterinary surgeon straight up to London, not to your local authority.

3288. (*Mr. Nunneley.*) I was wondering how it was that it was found out so quickly, if the farmer did call in his veterinary surgeon. You say he was sending milk to London; was not that stopped at once?—Oh, yes.

3289. You say years ago you kept on sending?—Yes. I could give you the quantities of milk I sent morning and night.

3290. But that would not be allowed now?—Not at all.

3291. Did Derbyshire suffer much between 1870 and 1880 from foot-and-mouth disease?—I could not say it suffered very much. There were frequent outbreaks, but I think we were always very fortunate. The restrictions were of the least possible kind.

3292. But this time you were saying that some of the farmers were saying the restrictions were almost worse than the disease?—Because they could not move their cattle where there was something to eat. They were obliged to go to the haystacks, and everybody in Derbyshire was terribly alarmed whether they could get through the winter.

3293. Were these few who objected to being shut up in that way, farmers who had suffered 30 years ago?—I am afraid there are not many of those left.

3294. From your own experience, is it not better to take an area five miles too wide than five yards, or one mile too little? You would rather find fault with the Board of Agriculture in that way would you not?—When you come to consider that a 12-mile radius is 452 square miles. Now, when you get a 15-mile radius it is 706 square miles, and that means 706 square miles under restrictions. If it is possible, if the Board could think it possible—which is one of the main reasons of my coming here to-day—to recommend that in future there would be a smaller district, it would give great satisfaction, if they feel that they can do it without running great risk of having to pay larger sums for compensation and incur larger expenses, well, I am sure, Derbyshire farmers will be very glad.

3295. I was rather putting it to you, if you knew much of the disease years ago, that they should be over careful in having a larger area, if necessary, rather than run the slightest risk of having a smaller one?—I have thought of that a good deal, sir, and I could not say yes.

3296. Certainly from my experience—of course mine was more a feeding country—when you get the disease among the stock in the autumn you had better have half the county shut up than have it spread?—If I were asked if I must have one or the other, anthrax or foot-and-mouth disease, I would certainly take foot-and-mouth disease.

3297. That I was not referring to at all. Although you think this rather a wide area, is it not better to be over-cautious by having a wide area, than to at all run any risk by having a smaller area?—You would say it is a matter of opinion, but I really think the area was larger than necessary.

3298. (*Major Dunne.*) We rather gather that you think the infection may be brought in by means of foreign milk?—I do.

3299. Would you be in favour of Regulations for sterilising all foreign milk?—I think it is a most excellent idea, to Pasteurise all foreign milk before it comes into England. They must do something to it before they can send it in, and I should think the Pasteurisation of the milk would be a good thing for preserving the milk as well.

3300. If that is the case, you would be equally in favour of sterilising your own milk before sale?—I have thought of that. It is absolutely impossible, I live close to the station; our first milk train goes at 6.40 in the morning. At 6.40 it is a very busy time for farmers sending off their milk to Manchester, Sheffield, and the northern parts. London milk goes later, but it would be absolutely impossible for them to get their milk ready, cool it, Pasteurise it, and then send it to the station in time for the 6.40 or the 8.40, you may say.

3301. But do you not think the foreign exporter might plead the same difficulty?—I have not much sympathy with him.

3302. (*Mr. Nunneley.*) Would it not mean if you had to sterilise that you would have to keep the morning's milk a little and send it off at night, and the night's milk in the morning?—We should, and I do not think we would get the same money for it.

3303. I was not thinking much about money, but would it be worth while sending it on 12 hours later in order to sterilise it?—I do not think it would. We can get sterilised milk if we want it locally, but very little of it is used.

3304. Do you say that it is worth less money in London after it is Pasteurised and sterilised?—It is worth less money because of what people think of it; they do not think it is so good.

3305. But would the money value in London be less?—I could not say that.

3306. That might be the reason for the farmer objecting?—I could not say it would be less; I can only say it is not so well thought of.

3307. (*Sir Harry Verney, M.P.*) I have only one question, if I may ask it, about the area. You start in the first instance with an area of 15 miles?—Yes.

3308. How long was that kept on?—In Derbyshire it was only 12 miles.

3309. In the first few hours it was 15 miles?—In the first three weeks, sir. I have all the Orders here.

3310. It started really at 12 miles?—That was the outside area, the 12 miles.

3311. It lasted three weeks?—Then it was reduced. The 25th August was the date of the first Order; that was for a 12-mile radius, then the second one was on the 28th August.

3312. What is that for?—It does not alter the area at all; it is only about the licences. Then the next was on the 13th September.

3313. Yes, that is three weeks?—That was for a smaller area.

3314. What did that reduce it to?—The district in the administrative county of Derby comprising the parishes of West Hallam, Kirk Hallam, Dale Abbey and Stanley.

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[Continued.]

3315. That is less than 12?—Oh, yes; that would not be more than three and a half to four miles.

3316. Did your committee have a definite recommendation that it should be less than 12 or a certain mileage?—We thought it should be six miles at the outside.

3317. In this particular case you thought it should be six miles?—We thought a six-mile radius would be sufficient.

3318. (*Chairman.*) From the beginning?—Yes. Then it was taken off on the 28th September.

3319. (*Sir Bowen Bowen-Jones.*) Have you any recollection of the restrictions imposed in connection with rinderpest in 1865?—Yes, sir.

3320. Well, you remember that they were much more oppressive and restrictive than anything that has been imposed upon us lately?—Oh, yes, it was a much more awful disease. I remember one farmer putting outside his place: "Anyone who enters here will be shot," and I believe the man would too. He declared that he would shoot anybody who came on his farm.

3321. I quite agree with what you have said about the severity of these restrictions. Do you remember in your part of the country then that the farmers loyally accepted them and carried them out?—Oh, I think so; perfectly.

3322. Why should they not be equally loyal and satisfied with later restrictions that are imposed for foot-and-mouth disease now?—I hope they are not disloyal over it, sir. I think that they would resent that very much if it were thought that they were disloyal, only that they wanted to represent that it was an unnecessarily large district.

3323. Of course, you know that foot-and-mouth disease is very easily spread, you know that probably from your own experience and from what you have heard?—Yes.

3324. From what you have heard to-day in this room from a scientific witness, and then the question arises, as you give us figures about a 15-mile radius: Is it not better, in your opinion, to have 706 square miles of reasonable restrictions than 706 square miles of disease?—Yes, sir. I only hoped I should be able to convince you that the 706 square miles made it just a little bit unreasonable, that is the only suggestion I can make for an alteration which I thought would be an improvement on the regulations of the Board of Agriculture in stamping out.

3325. Now, what would you suggest as being the limit?—I thought six miles would be.

3326. We have heard to-day in this room, or yester-

day, that this disease spread more than six miles from within the limited radius?—Well, in Somerset, if you remember, last year, it did not spread more than a two-mile radius.

3326A. Yes, we have had it in evidence that it has spread six miles.

(*Sir Harry Verney, M.P.*) And even 10; possibly 10 in one case.

3327. (*Sir Bowen Bowen-Jones.*) In the light of that what would you say?—From my own personal knowledge, from seeing animals affected by it, it has not spread 100 yards.

3328. But it has been given in evidence before us here that it has spread six miles, if not more—Sir Harry Verney says 10—and that it would have spread further had not the 15-mile limit been imposed. Under those circumstances do you think it wise to recommend a limitation of that?—I would not like to say anything disrespectful of any witness, but I wonder whether he had had quite a personal experience of it?

(*Sir Harry Verney, M.P.*) The Board of Agriculture witnesses.

3329. (*Sir Bowen Bowen-Jones.*) I think we may take it that the evidence was true?—I am sure they meant it to be true, but I wonder whether they were not a little bit unduly alarmed when they do not seem to quite coincide with one's own personal experience.

3330. (*Sir Harry Verney, M.P.*) The man had been to every outbreak; you have been to one outbreak; he has been to perhaps 20?—I have been to a good many when we had them all round us.

3331. (*Sir Bowen Bowen-Jones.*) You remember the 1874 outbreak; you had it then?—Yes, in 1875.

3332. Did it not spread all over the country?—No; I did not have it in 1874, though I knew neighbours of mine who had it within a mile of me, and one within a few hundred yards.

3333. You were the one exception?—Yes; many others escaped.

3334. It is matter of common knowledge that it did spread at that time?—It did.

3335. (*Chairman.*) You must not think that any member of the Committee considers that the members of your committee were disloyal in regard to this; we only think they are a little ill-advised in asking for this, which has been proved to be a good and a reasonable area. We do not think they are disloyal at all; I am sure they did everything they could to assist the authorities?—Thank you, sir, for that; they did, and I hope they always will; I am sure they will.

3336. Thank you, Mr. Waite.

The Witness withdrew.

Thursday, 29th February 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (*Chairman*), presiding.

Sir CHARLES D. ROSE, Bart., M.P.
Sir HARRY VERNEY, Bart., M.P.
Sir J. BOWEN BOWEN-JONES, Bart.
Mr. CHARLES BATHURST, M.P.
Mr. JOHN HINDS, M.P.

Mr. GEORGE R. LANE-FOX, M.P.
Mr. RICHARDSON CARR.
Major E. MARTEN DUNNE.
Mr. E. E. MORRISON.
Mr. E. M. NUNNELEY.
Mr. W. H. F. LANDON (*Secretary*).

Mr. A. MANSELL, representing the Royal Agricultural Society, called in and examined.

3337. (*Chairman.*) Mr. Mansell, you have come here to give us some evidence on behalf of the Royal Agricultural Society?—Yes, that is so.

3338. You are a member of the Veterinary Committee of that Society, and you also give evidence on behalf of the Executive Committee of the Shropshire County Council?—Yes, sir.

3339. That is really the Contagious Diseases Committee?—Quite so.

3340. You are a land agent and auctioneer, and a large exporter of pedigree stock?—That is correct, sir,

3341. And during the last few years a good many thousand head of cattle, sheep, and animals have passed through your hands to go abroad?—They have, sir.

3342. And I suppose it goes without saying that these outbreaks that we have had have seriously interfered with your trade?—Oh, very largely; in fact I may say last year they practically cut the business in two, because some countries take none.

3343. You have given the Committee a précis of your evidence, and I may say we have had a good deal of evidence as regards these imports, but I think just

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Mr. A. MANSELL.

[Continued.]

roughly we should like to hear from you as regards the hides and the calves in their skins. What you would suggest about that. You consider, I presume, that the hides, wet and dry hides, but more especially wet hides, are a great source of infection?—I think they must be a source of infection. They are not only a source of infection, but I have mentioned a case here where I saw a thousand hides in a tanyard in my own town last July.

3344. In Shrewsbury?—Yes, they had just arrived from Paris.

3345. Were they dry hides?—Dry hides.

3346. A thousand?—I saw part of a thousand. I went in a few days afterwards and happened to speak to the tanner. I said, "Where did these come from?" He said, "They are part of a consignment of a thousand hides from Paris." That is last July.

3347. Where were those hides going; going to a tannery?—They were being tanned in that particular tanyard. But I think the great source of danger is that the trucks that bring these hides to Shrewsbury might be filled by any corn merchant or cake merchant sending cakes away straight to a farmer inside the county or outside the county unless those trucks were thoroughly disinfected. I believe it is quite possible to disinfect hides—I believe it is done in some countries, and I believe Mr. Stockman has expressed the opinion that a certain process will disinfect them; in fact I have a letter here from Mr. Seymour Jones in reference to the same matter.

3348. He is coming to give evidence, so we shall get it from him. That is what I was coming to about the disinfection. I understand you to say some foreign countries do disinfect?—I believe America does.

3349. Are they disinfected at the port of embarkation?—I cannot say, but I should say at the port of debarkation.

3350. At the port of debarkation?—I should say so; it would be safer, I think.

3351. These hides which you saw with your own eyes at Shrewsbury; were they brought from Paris, and were they taken straight to the tanyard from the station?—Yes, I presume so, from the station.

3352. You have had no outbreaks in Shropshire during the last few years, have you?—No, none.

3353. There is one other of these imports, and that is calves imported with their skins on?—Well, I have not been able to get any figures as to what numbers do come in, because apparently the dead meat are all returned as one, but I understand there are a good many come in from Holland with the skins attached. If that is so, considering that country is very full of foot-and-mouth disease at the present moment, and very often is, it must be a frequent source of danger.

3354. I see by a return you have issued, which I have got in my hands, that with regard to dry hides the quantity coming into this country for the 12 months to 31st December 1911 was 462,354 cwt.?—These are taken from the Returns.

3355. Of the Board of Trade?—The Parliamentary Returns.

3356. And the wet hides were 658,059 cwt.?—Yes, largely, you will know, from Russia, Germany, France, Belgium, Italy, Argentine: all places where you have got foot-and-mouth disease rife.

3357. Is there anything in particular that you wish to say upon any of these other imports?—Well, I would like to call your attention to unboiled sheep's heads. I see by your report in 1900 an outbreak was attributed to the use of unboiled sheep's heads for pigs. I believe we import a good many unboiled sheep's heads, and it must be a source of danger, and in the Board of Agriculture Report of 1900, p. 26, you say: "The disease was found by the Board's veterinary advisers among the cattle, but there is good reason to suppose that it has previously existed among four of the swine. These four swine had been fed partly on sheep's heads imported from Holland. The owner had been in the habit of boiling the sheep's heads before giving them to the swine, but had discontinued the practice shortly before the time when the pigs were supposed to have become affected. It was suggested that the infection was carried to the swine in this way, but the evidence in favour of the suggestion is not conclusive."

3358. We have had a good deal of evidence about these different imports, especially about the outbreaks last year, in 1911, and up to now we have had no evidence to show us that any of these outbreaks were attributable to any of these imports; we have found out nothing at the present time?—Quite so.

3359. We have heard evidence like you have given to-day of hides being a source of infection. We have not been able to trace these outbreaks to any of these imports?—No, but I believe we have been able to trace anthrax, have we not, to the import of Indian bone-meal and other bone-meal, and even cake; and if anthrax can be introduced, possibly obtained on the ship, why could not they contract foot-and-mouth disease in contact with hides or in contact with wool, or anything coming from a country that is full of foot-and-mouth disease?

3360. I think we have had evidence that anthrax is brought in by Russian oats?—Well, I think there is evidence that it has been brought in by bone-meal. I can give a case. It is some years back where two men bought Indian bone-meal and used it on grassland, bought it from the same merchant, and both of them had anthrax on the same farm at the same time. That shows pretty clearly to me that it was imported by bones, and I think if you can import anthrax, there is no reason why you should not import foot-and-mouth disease.

3361. Now I come straight on to the last page of all, and that is your suggestions for preventing the introduction of the disease. I see you say that "Steps should be taken to ascertain what was being done by the Channel Islands authorities, also the Irish authorities." Do you mean as regards the Regulations they carry on in Jersey?—Yes, they are so careful that they actually kill carrier-pigeons which arrive there.

3362. In Jersey?—In Jersey. There is a letter which I have from the Secretary of the Jersey Herd Book of this year, in which he says: "In reply to yours of yesterday, the carrier pigeons of which you have heard were landed in Jersey, with the intention of flying them from the harbour; but, as there is a rule prevailing which provides for all birds imported into this Island to be killed on arrival, plucked in the slaughter houses, and the heads and feet cut off before removal, the carrier pigeons had also to undergo the same process, to the great disappointment of the owner."

3363. They kill a carrier pigeon?—Yes. I also have a letter from the same gentleman dated the 22nd February, in which he says: "We have under consideration the question of motor-cars, and there is no doubt they will be washed and disinfected on arrival from the Continent," so that they evidently are inclined to think that motor-cars are a source of danger.

3364. And is it not a fact that they have not had outbreaks in the Channel Islands for many many years?—Well, for a considerable time, and they are very much nearer the French coast than we are.

3365. And do you put their immunity from disease down to the very stringent action they take upon these things?—Well, I think it is something for the Committee to consider and ascertain what they have done. I do not know that they have done anything very particular, but it is very extraordinary that they are so very much closer, and that their cattle are out in the fields more even than our cattle, and that they have not had foot-and-mouth disease. I cannot help thinking the Committee should try to ascertain what they are doing. The same thing applies to Ireland. I believe they have not had foot-and-mouth disease for 27 years.

3366. Well, we are to have a representative of the Irish Department here. It has been given in evidence that the reason Ireland has escaped is that England rather acts as a buffer between the Continent and Ireland; it is not so likely to come across?—That will not apply to Jersey or Guernsey; they are much nearer. I do not know what the distance is, but I should think it is a very few miles from St. Malo to some parts of Jersey.

3367. Then you suggest that Continental ports shipping to England from countries where foot-and-mouth disease is known to exist should be watched by inspectors appointed for the purpose? Do you mean this country to have inspectors at all the Continental ports?

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—Well, I take it we want to find out the source, and I put it in this way, that any first-class business man, or board of directors, having his business assailed by outbreaks of foot-and-mouth disease, the first thing he would do would be to get hold of some smart inspectors, send them to the Continent, and watch these ports, to see if there is anything coming across which does not appear in the Board of Trade returns or the Parliamentary Returns, and do the same on this side. It is possible there may be something that does not get into the returns that is a source of danger. I think a prudent business man would do it if he had the same interests at stake that the pedigree stock-breeders in this country had. It is what I think any prudent business man would do, that is the way I look at it.

3368. It is a question whether foreign countries would allow us to have inspectors at their ports?—It could be done secretly. They would not be there as inspectors with uniform on, but you would simply send some men there to keep their eyes open.

3369. You mean to watch imports, you do not mean to watch the disease?—No, to see what is put on the ships, to see if there is anything coming in that does not appear in the returns, something of a dangerous nature, ferret it out, try to do so; I do not say there is.

3370. You think there may be?—There may be, and the interests at stake are so great that I think it would be a wise course to take.

3371. Well, then; as regards motor-cars, do you really think that is a source of danger?—Well, I think it may be; they have to come through France. There are something like 30,000 cases or something approaching it to-day. These cattle must cross the roads, and these motors must cross the roads. And even apart from that they may pick up something at a farm-house, pick up eggs or anything else if they are touring across, they may inadvertently have a little hay and straw in their motor car, and when they get 30 or 40 miles inland on this side they may throw this hay and straw out. I would like to have every car that arrives here searched to see that they take nothing into the country. We are told that the disease may be blown by the wind by straw and all the rest of it, and it is quite an easy thing to do.

3372. It is certainly not an impossibility, but I should not have thought it very likely?—Well, there are many thousands of cars land at Dover, and a great many of our outbreaks have been below London, which rather points to the fact that we get it from the Continent.

3373. But from your wide experience now in the last few years can you tell the Committee of any outbreak yourself that you know of which you really yourself put down to any particular thing that has been brought into this country, any import or anything?—No, fortunately our county and district has been free. Certainly I cannot say that I can give you any specific case because, if veterinary surgeons have failed to find it, I do not think a layman is likely to.

3374. Then, you say that a certain number of veterinary surgeons should have facilities for seeing foot-and-mouth disease so as to be in a better position to diagnose the disease. Do you find that the veterinary surgeons in our country districts, some of them, do not know what foot-and-mouth disease is?—I do not think they do. I do not see how they can, the young men. Fortunately we have been pretty free from it for the last 10 or 15 years, and I should think that the average young veterinary surgeon, no matter how highly qualified he is, the majority of them have never seen a case of foot-and-mouth disease. I think it is highly desirable that we should have a fair number of men who certainly have had experience of it and know something of it, so that in the case of an outbreak we should be able to send to the nearest man straight away. In case we got three or four simultaneous outbreaks we could not expect to get all our men from London.

3375. You are a member of the County Council of Shropshire. Do you suppose that the local authorities of Shropshire would have any objection to their veterinary inspector, when he is appointed, being approved by the Authority in London, by the Board of Agriculture,

before he was appointed?—Well, I cannot say, but our present man has had experience.

3376. I am only saying in general?—I should not think so myself; I cannot see that they could have any objection.

3377. So that a thoroughly competent man was the veterinary inspector of the local authority?—I see, as far back as 1900 in your Report, it says here: "The erratic and mysterious course followed by the disease makes it evident that it can be introduced and spread by means which are not easily recognised, and the conclusion to be drawn from the experience gained on this point would seem to be that in order to prevent this disease from becoming at some time as serious an evil as it has been in the past it will always be necessary for stock owners to be vigilant in order that the signs of its presence in their herds or flocks may be quickly recognised, and for the authorities to be prepared with adequate machinery for preventing the spread of infection from any centres that may be detected." This points to the necessity of having an adequate staff, and we might be unfortunate enough to have two simultaneous outbreaks in different parts of the country.

3378. You talk about our country veterinary surgeons not knowing of foot-and-mouth disease; do you think the stock-owners of the country know much about foot-and-mouth disease?—No, not the young men.

3379. Do you think it would be a good thing, which has been suggested before this Committee, that every three or four years a notice should be issued to all stock-owners and all veterinary surgeons describing foot-and-mouth disease and telling them what to do at once. Do you think that would be a good plan?—Well, it could not do any harm, and it might put people on their guard; but I hardly think it is necessary, at any rate if you can suppress it, it is not necessary; if we are not able to suppress it it is very necessary.

3380. But now you speak of suppressing it, do you think, knowing what the state of Europe is at the present time, and knowing that Europe is the seat of the disease, that there are thousands and thousands of cases of foot-and-mouth disease, is it not your opinion that as long as Europe is in that state, we are always liable, whatever action we may take, whatever regulations we may make in this country in regard to imports or anything else, we are always liable to spasmodic outbreaks of this kind from time to time?—Yes, but they have always had it to my knowledge. I have been in the habit of going to Germany for the last 20 years to buy Merino sheep, and I can vouch for the fact that they had foot-and-mouth disease then, and I have never been there when they have not had foot-and-mouth disease. I believe the best herd of cattle at the Paris International Show in 1898 broke down from foot-and-mouth disease on the way to the Show. I do not think the Continent has ever been free.

3381. Then, it is very lucky for us that they have not had more outbreaks?—Yes, but they have more now than they have ever had, they have never been free from it. I have had to deviate in buying Merino sheep there because they have had foot-and-mouth disease on certain farms.

3382. I gather that you are rather strong on the point that foreign governments should know exactly how we stand in this country as regards disease?—Yes, I am.

3383. You feel that so much is made of one case of foot-and-mouth disease here that it is exaggerated when it gets to the Continent or abroad?—Undoubtedly, from my own correspondence I can prove that the majority of the people abroad think, that when one isolated outbreak occurs there are several and we have more or less got it all about the country. The fact of the matter is very often there are questions asked about it in the House of Commons, it gets into the papers and is talked about to an extent that people imagine that we are full of foot-and-mouth disease; that we have foot-and-mouth disease right up and down the country.

3384. (Sir Bowen Bowen-Jones.) With reference to what you said about disinfecting the trucks and wagons that bring in hides, do you not think it would be better to stop the source of contagion at the outset and dis-

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infect the hides on the other side at the port of embarkation?—Yes, I do not know that it matters very much where it is done, but it should be done at the port of embarkation or debarkation; probably embarkation is better on second thoughts.

3385. But if they are rendered innocuous at the port of embarkation the disease cannot be spread through cake or corn or other agency in transit?—Yes, quite so, that is quite true; I agree with that.

3386. By that means we can tackle anthrax as well as foot-and-mouth disease?—Quite so.

3387. With reference to what you said about Jersey, I think we are all agreed that we should ascertain as far as possible how that country has escaped so much. Does it not occur to you that one cause is, that there is very little importation of general merchandise and such things as hides and calves with their skins on, to that country, compared with what there is to our ports?—I should think very little. I do not know that there is any; that would be a matter to ascertain.

3388. I think it is very important that we should know, with your wide experience, something about the question of quarantine with other countries, and the best means of limiting or lessening the duration of that quarantine, and so not prejudicing breeders of pedigree stock in this country. You are conversant no doubt with the quarantine arrangements of most foreign countries?—Yes, I have them here.

If you can give the Committee that information it will be rather desirable to have it on the notes.

3389. (Chairman.) Have you got it there?—I have got it here.

3390. (Sir Bowen Bowen-Jones.) Might I preface my request for that return, by asking you whether in all cases when this country is free from disease, quarantine is demanded by other countries, and if not by all, by which?—Quarantine on this side do you mean?

3391. No, on the other side, when we are free from the disease?—Practically all countries have a short quarantine, it has been very much reduced. Australia used to be about 90 days.

3392. Perhaps you will give the present quarantine regulations and what they were a short time before?—Well, Argentina, cattle 30 days; sheep, goats, and swine 15 days. Canada, 30 days from date of arrival at quarantine station, for cattle, sheep, goats and swine 30 days from date of clearance of the vessel from embarkation at the port. Cape Colony, 30 days for cattle, pigs no quarantine if accompanied by proper certificate. I need not give the Continent, I think. New South Wales, horses 14 days, cattle and swine 40 days, sheep 30 days. New Zealand, horses 14 days, cattle, sheep and goats 60 days, pigs 60 days, dogs six months. Queensland, horses 14 days, cattle 40 days, sheep 30 days, swine 40 days. South Australia, horses 14 days, cattle 40 days, sheep and swine 30 days. Tasmania, practically the same. United States, cattle 30 days from the date of arrival; sheep and swine 15 days from the date of arrival. Victoria, cattle 40 days, horses 14 days, sheep 30 days, pigs 30 days. Western Australia, very much the same. It will be in the recollection of the Committee, I daresay, that we moved some few years ago to get the quarantine reduced in Australia through the National Sheep Breeders' Association, and we did get it very considerably reduced. It used to be then 60 and 90 days for cattle, which were very prohibitive, because any lengthened quarantine naturally increases the cost of an animal to the buyer and is detrimental to an extension of business.

3393. Do these quarantine arrangements that you have quoted apply when this country is free from foot-and-mouth disease?—Yes.

3394. Could you make any suggestion to the Committee by which foreign countries would relax their regulations after foot-and-mouth disease is declared to be free? I might say we have a suggestion from Professor Penberthy, who thought if a temporary quarantine were established on this side it might facilitate that operation. Have you thought anything about that?—Well, I had a case in point last year. I was shipping to New South Wales, which is part of Australia, and just as the cattle were going we got an outbreak and the ports were closed. I cabled to my people out in New

South Wales, the man I was acting for, and after a good many cables backwards and forwards, I eventually got permission to quarantine these animals at Liverpool for 14 days, which I did. They were examined daily by the New South Wales Government's veterinary surgeon, and eventually shipped. But, of course, that is an expensive process, and it is not everybody that would stand that sort of thing. I happened to be acting for well-to-do people, but it would be very costly to have it general. I cannot help thinking, if we could keep our country clean we might get the quarantine reduced on the other side, and it is certainly much cheaper quarantine on the other side than it would be here.

I think we shall all agree with that. But would the game be worth the candle, to pay for quarantine on this side in order to expedite getting those foreign countries and colonial countries to take our stock in?

(Mr. Richardson Carr.) I think you only mean temporarily.

3395. (Sir Bowen Bowen-Jones.) Temporarily?—Oh, undoubtedly temporarily.

3396. On the lines you did; you appear to have taken the initiative in this very thing?—Yes.

3397. You persuaded the Australian authorities to concede this point?—Yes.

3398. Do you think Argentina would do the same if it were recognised as a general practice to be put into operation when we declared foot-and-mouth disease in this country? The country is declared free; if you will take our stock in, with a fortnight's quarantine on this side, we will undergo it. Would not the game be worth the candle?—Undoubtedly, if you could persuade them to accept it. I am rather doubtful about the Argentine accepting it; probably the other countries might.

3399. You think it would be worth trying?—Oh, undoubtedly worth trying. You see, they are more or less carrying out a similar thing to that now. People sent animals to Scotland some three or four months ago and they had to be quarantined there some six months, and, as matter of fact, they are shipping from Scotland to the Argentine now, and can do; Ireland and Scotland are shipping. They have chartered a special ship, and they are going, either this week or within the next two or three days. They quarantine them six months in Scotland.

3400. Why is the Argentine averse to taking our stock?—I do not know; there may be interests at stake that are something different.

3401. But are the cattle and sheep of the Argentine Republic so advanced in excellence and quality that we cannot improve them?—No doubt we can improve them; but, of course, it makes the pedigree cattle of that country very much more valuable if our cattle are kept out.

3402. To the breeders?—To the breeders there.

3403. You think the breeders would keep our ports closed as long as possible for self-interest?—There is a bit of feeling; we closed our ports against their cattle. I think there is a little bit of feeling between the two countries.

3404. (Sir Charles Rose, M.P.) In the opening part of your evidence-in-chief, you say there is a great hindrance to foreign business brought about by outbreaks of foot-and-mouth disease. I suppose you have no figures to show the damage that has been suffered?—No, I have no figures; but you may take it there was not anything like half the export business done last year. The figures are available.

3405. From those figures we would really see?—I know in the ordinary case it was practically one-half.

3406. The falling off in your own trade, owing to foot-and-mouth disease?—I think it is patent to everybody. You could get the actual export certificates issued from the breed societies; from which you would get the figures.

3407. I recognise that; I did not know whether you had them?—No, I have not.

3408. As to your suggestion that there might be some kind of secret inspection at the port of embarkation; do you think that is really a practical suggestion, seeing that there are so many ways in which this disease can come in?—I think it is a very valuable one;

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you might find out something that has not appeared on any returns.

3409. You mean as a means of conveyance or the spread of the disease?—Yes.

3410. Then, you mentioned motor cars; have you ever seen any hay or straw in a motor car; I should be very sorry to travel with it in one?—Well, I daresay; but you might have something packed in it, a little thing wrapped up in it. You must recollect these sort of things are quite possible to happen.

3411. Seeing that the disease is so rife on the whole of the Continent and it is so easily carried, do you not think it is a wonder that so few cases arise in this country?—Yes.

3412. It speaks volumes for the authorities in the conduct of their business in stamping it out?—It has always been rife there.

3413. I am afraid you did not catch my point. I was saying it is so rife on the Continent, the Continent is so adjacent and it is so easily carried over here, do you not think it speaks volumes for the authorities that it is kept so much in check in this country?—Undoubtedly.

3414. Have you anything to suggest in regard to the Board of Agriculture Regulations that could be in any way tightened up so as to stamp it out more quickly than appears to be done?—No, I think in the case of stamping out everybody has the highest praise for what has been done when the disease has appeared. I take it your main object is to keep it out.

3415. One more point. You rather complain, I think, of the publicity that is given when cases of foot-and-mouth disease arise here and they are much magnified, and, therefore, there is injury to the trade?—Yes.

3416. You would not suggest that full publicity should not be given to them, would you?—No, but what I would suggest is that the Governments of other countries should be specifically informed as to what is happening and that the disease is not rife up and down the country.

3417. As long as there are telegrams and the Press you will not find anything to minimise?—Well, an official notification would minimise that.

3418. (*Sir Harry Verney, M.P.*) I only want to ask one question on the last sentence of your précis, that a Control Experimental Station be established; what exactly do you mean by that?—Well, we should be able to feed with some of this packing and cake and various things to see whether foot-and-mouth disease was brought over. That was one means of trying foreign oats, trying various things that were imported.

3419. And where do you propose it should be—in Shropshire?—No, I do not. That is a question for the Committee.

3420. I mean surely it is running a tremendous risk. You propose it should be somewhere in this country do you?—Well, possibly you might get an island for the purpose, I do not know where, but still you would find out then whether it was introduced by imported oats, &c.

3421. I did not know whether you had any idea of the place?—Not at all, but it is suggested time after time, in fact, in Board of Agriculture Reports, which say it was brought in by packing, and it has been brought in by oats and maize; it has been suggested in the reports of the Board of Agriculture.

3422. It is quite agreed; I did not know whether you were to suggest some particular place; that is the difficulty in the matter?—Oh, no.

3423. (*Chairman.*) But anyhow, I suppose you would not hear of having this control station in this country itself?—No, I do not think so.

3424. (*Mr. Lane-Fox, M.P.*) You spoke of buying Merino sheep in France when there was a great deal of foot-and-mouth disease?—In Germany.

3425. What are the Regulations about the importation of sheep in this country?—You cannot get them into this country. I was buying them for other countries; I was buying for the United States. As a matter of fact, the United States have closed the ports some years now.

3426. As a matter of fact, you cannot import sheep into this country?—No.

3427. From your experience abroad, if we sent any of our younger veterinary men to travel, would there be any opportunity given to them to see cases of foot-and-mouth disease on the Continent?—I should say so without a doubt; I think there would be no difficulty about that.

3428. You think the authorities would not put any difficulty in the way?—No, I should say not. I think they would do everything to facilitate anything of that sort; they are identical interests.

3429. In that way, we might get constant experience in regard to foot-and-mouth disease if there was power given to a veterinary surgeon in that way?—My point was that I think we ought to have more men in the country qualified veterinary surgeons who had really seen foot-and-mouth disease, and who should be able to diagnose it quickly.

3430. But how do you suggest that should be done?—It is easily done. A certain number have only to travel over to Germany, get in connection with the authorities, and they can very soon qualify.

3431. You think that would be possible?—I think so, why should there be any difficulty.

3432. You have not come across any difficulties which have been put in the way of going into infected areas?—Oh, dear no.

3433. As regards the bringing of anthrax, I suppose there is no doubt that hides have brought anthrax into this country more than anything else?—Wool, I should say, is a very fruitful source.

3434. It was not necessary to go to food-stuffs and corn, and so on?—No, but you might get it on board the ship, if they are adjacent to one another, or rubbing up against one another. I do not know what precautions are taken. Feeding-stuffs might be up against anthrax, anthrax wool.

3435. You look on wool and things of that sort as a much more likely source?—Oh! wool is a much more likely source, undoubtedly.

3436. Both for anthrax and possibly foot-and-mouth disease?—Yes.

3437. (*Major Dunne.*) You have given us a longish list here of articles which are possible sources of infection. Does that imply that you would suggest that the great majority of these articles should not be allowed into the country at all?—No.

3438. You have only put them down as possible sources?—Yes, because what you wanted to do was to try to find out the source of infection.

3439. But, you do not propose that there should be any further legislation to restrict the import of these articles?—Oh, no. But I should see no very great harm in having all that hay and straw packing burnt. It cannot be very valuable, and in a year like this, when bedding is very scarce, it might get on to a farm and might cause an outbreak; in fact, the Board of Agriculture attributed one at Rhyl to that some years ago.

3440. Then, you would suggest that all these foreign hides and calves in their skins and wool, and goatskins and so on, should be disinfected before they are landed here; is that possible?—Oh, quite possible in the case of the hides. I do not know whether you could do it in the case of the calves without injuring the carcase, but it is certainly possible in the case of hides.

3441. But, would not the expense possibly outweigh the possible risk of infection being brought by these articles?—I think it is thoroughly worth it. If you discourage breeders of pedigree stock you must injure the ordinary stock. If a man has not an outlet for his best cattle he will not have any of his second-rates to sell to the ordinary farmer for the improvement of the stock. Anything that is detrimental to pedigree stock must more or less hit the ordinary commercial stock of the country.

3442. That is looking at it purely from a stock-owner's point of view; that is not looking at it from the general trading point of view of other trades which are interested in the cheapest importation of these various articles for manufacture, like hides and so on?—I cannot speak as to the cost of disinfecting hides, but it is a fact that America does it. Why cannot we do it? They do not find it prohibitive—the cost, I presume?

3443. You have never heard I suppose what expense

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is incurred?—No; it could be obtained no doubt; Washington could supply you with that if you wanted it.

3444. Then, you were asked one question by Sir Charles Rose in regard to whether you were satisfied with the procedure of the Board of Agriculture in cases of outbreaks, and you consider that the regulations of the Board of Agriculture are all that could be desired?—Oh, yes, I think they are very prompt and very good.

3445. We have had one or two witnesses who have complained a little bit where they themselves have been affected by these restrictions by the Board of Agriculture, rather asking the Committee to possibly recommend that there should be some relaxation?—Well, it would be very dangerous to make.

3446. You would not approve of any relaxation?—No; certainly not. People in the vicinity must suffer in the case of an outbreak.

3447. It was rather a question of the size of the zone, the 15-mile radius, which is the present regulation, and I think the Committee rather gathered that in certain instances they thought this was an unnecessarily wide area?—It is a veterinary question; it is not a question I could give an opinion upon at all.

3448. You have had no personal experience of these restrictions?—No, I am glad to say we have not had much personal experience in my own county.

3449. (Mr. Bathurst, M.P.) You say you have no figures to show the effect upon the cattle trade of these outbreaks of foot-and-mouth disease from which we have been suffering. But I suppose you are able to say with your large experience that the effect upon trade in this country has been very serious during the last 12 months?—Quite so, sir, and a lot of the most valuable bulls bought at Birmingham and various places last year were never shipped; in fact, out of my own county animals bought at high prices were never shipped. In my own case I was not able to ship 200 sheep this autumn which had been bought, and every exporter more or less has had the same experience.

3450. And the same applies, I think, to other forms of stock and sheep?—Oh, to every class of stock.

3451. There was good enough trade last week at Perth and Aberdeen, I think?—There they are able to ship as I told you.

3452. You attribute that entirely to the fact that their ports are open whereas ours are not?—The best market in the world is open to them.

3453. Do you happen to know in connection with Bingley Hall sale next week whether the entries of good pedigree stock are fewer than usual?—Fewer than usual much fewer.

3454. Do you attribute it to that entirely?—Undoubtedly.

3455. You referred to ships carrying hides as being possibly a source of infection, because they might subsequently carry feeding-stuffs?—Yes, they (hides) come into our town in railway wagons, and, of course, these wagons are very likely to be refilled with cake or some other produce going to a farm in the county.

3456. Is there any sort of cleansing takes place?—I believe they lime-wash. Whether lime-wash is sufficient, and if that is all that is done, I cannot say.

3457. Assuming lime-wash is not sufficient for the purpose, would you advocate some other kind of disinfection?—Certainly, for these dangerous products.

3458. You mentioned in your précis—I think it is a matter of great interest—that carrier pigeons are, at any rate in Jersey, considered as a possible source of infection from the Continent?—Yes.

3459. Do you consider, seeing that pigeon clubs have very largely increased all over this country, which fly their pigeons between France and other Continental countries and this country, that they are possibly a source of infection which ought to be dealt with?—I am rather sceptical myself that it is introduced in that way; it is possible.

3460. I notice you lay stress upon wool rags and wool waste; perhaps we may take them separately. How do you consider that wool rags may be a source of infection?—We import a tremendous lot of this from Germany, possibly wool rags worn by men who are in

these infected districts, and whether they are disinfected before they come here I cannot tell.

3461. How would they get in touch with live stock in this country?—Well, they would have to be carried in trucks, I take it. The amount of wool waste we import is very large, shoddy, and mungo.

3462. You except shoddy as used as a manure; that rather puzzled me. I am bound to say that I should have thought that shoddy used as a manure was a possible source of infection?—Yes, I think it is.

3463. I understood from your précis that you excepted that?—No.

3464. What have you to say about that. Do you happen to know where shoddy comes from mainly?—There is a large amount comes from the Continent. I cannot say where. It does not give the countries in the returns; you cannot get at it.

3465. If I remember right it is largely used in the south-eastern counties as a dressing for hops?—Yes; shoddy is used in Bradford and those districts for making up into clothing. There is an enormous amount of that goes into clothing.

3466. I emphasised its use in south-eastern counties, because we have been told that they are the counties in which foot-and-mouth disease occurs more often than in most parts of the country?—Yes.

3467. Do you happen to know whether this shoddy is treated in any way?—No, I do not.

3468. Then I want to ask you a question about hay and straw used for packing. It has been suggested to us by a gentleman who has been a farmer that possibly hay or straw is used for packing foreign goods which come to English tradespeople, and that these English tradespeople subsequently repack their own goods with the same hay or straw and send them to persons who may put it into their cow byres, or otherwise on to their farm premises?—Yes.

3469. Is that a possible source of the disease?—I have mentioned that. I think it is quite a possible source of infection.

3470. Is that the way in which you think infection comes through the medium of hay and straw?—I have mentioned that in my précis.

3471. But through the local tradespeople?—I think so, because you can see them unloading these things packed with hay and straw. I have regularly seen it in various country towns. I have often wondered what became of it; I thought it was a great source of danger.

3472. And you think that stock-owners, particularly the smaller men, would very likely use this material either litter or food?—I think in a year like this, when it is so extremely dear and scarce, there is a great temptation for a man to get hold of some of this stuff and use it for bedding.

3473. You have no precise knowledge?—No, I have not, but it has occurred to me that there is an enormous lot of it comes.

3474. According to your figures I see that the largest amount of rape seed comes from Russia, and you consider that is a possible source?—I mention that as coming from a very dangerous country. It must be grown on a farm. The seeds come here, I presume, to be made into cake.

3475. I was going to ask you about the cake. The cake is manufactured here and not in Russia, is it not?—I think not.

3476. I do not know what you mean; it is not manufactured here, do you mean?—It is manufactured here.

3477. Then, I see you say that eggs come in a larger quantity from Russia than from any other country, to the extent of 10,000,000 great hundreds. How do you consider that that may possibly be a source of infection?—I do not know how they are packed, but I thought it possible they might be packed with a certain amount of straw on the top. If there is, it is a source of danger. If they come otherwise, it is not a source of danger.

3478. You do not know how the Russian eggs are packed?—No, I do not know how they are packed.

3479. One witness told us that these eggs were not very clean, and that they had dung upon them; would

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that be your idea?—I cannot say that I have had any experience as to how they arrive or anything about that, but the number arriving from a country where foot-and-mouth disease is so very prevalent—something over 400,000 cases—or some very big lot, I have forgotten the actual figures.

3480. What are the numbers of cases; 10,000,000 great hundreds?—Yes.

3481. It has been suggested, that in order to ensure prompt action when an outbreak occurs, it might be advisable to acquaint farmers generally from time to time as to what are the symptoms of foot-and-mouth disease? Would that be a good thing, in your opinion, to do?—Oh, certainly there could be no harm in it; it certainly would be rather a desirable thing to do. If any suspicion arose, then they would be inclined to call in a veterinary surgeon quickly.

3482. Have you ever seen a case of foot-and-mouth disease in your market?—Years ago I may have done; but I have seen it on plenty of farms years ago in my own country.

3483. As regards the prejudice of Argentine breeders against the removal of restrictions, is it not a fact—I am not sure that I speak accurately—that it has been found impossible to maintain for any great length of years the stamina of pedigree stock in the Argentine without fresh blood being introduced?—I think, more or less, all countries have to come here. The characteristics change to a certain extent, they have to come here periodically for fresh blood, fortunately for the British pedigree stock-breeder.

3484. Do you not think the balance of opinion amongst stock-breeders in the Argentine would be in favour of opening their market to British pedigree stock?—I should say the balance of the majority of people would be in favour certainly.

3485. Now, just one word with regard to this Control Experimental Station. You have specifically mentioned an idea which is very dear to my own mind, which is, bearing in mind that the germ of this disease is ultra-microscopic, and, therefore, cannot be discovered in any way as a germ. The only way that you can trace the source of infection would be to feed certain suspected articles of food found upon the premises to sound animals and watch the result?—Yes.

3486. Do you, as a practical man, see any great difficulty in carrying out such experiments upon an island at a reasonable distance from our shores?—No. Of course, I think the main difficulty would be to secure the suitable island not to tread on anyone's toes. You may say if it is too close to any particular point the people living there would object to it no doubt.

3487. The main objection that has been put before us is that having such an Experimental Station even off our coasts may cause undue alarm to foreign purchasers. If such steps are taken that you have been advocating, that is to say, that our Government should make clear the extent of the danger arising in this country, do you not think that that fear would hardly arise?—It would satisfy the fear, you mean.

3488. I mean to say that if the Government made the position absolutely clear to foreign countries, their alarm, which is due at present largely to uncertainty, would be removed?—Yes.

3489. As regards quarantine it has been suggested that a temporary quarantine on this side in this country might be an advantage to stock-owners and tend to remove the present anxiety abroad. You mentioned a case at Liverpool where animals in quarantine were examined by New South Wales Government officials?—An official.

3490. A New South Wales Government official?—Yes.

3491. Assuming that such a quarantine station were set up here, do you think that the foreign representatives would insist upon applying their own tests in order to satisfy themselves as to the immunity from disease of the animals intended to be exported?—Well, you see in the case of all the Australian Colonies, the test has to be applied; either the Tuberculin test or the Malein test for horses by an official appointed by that Government, or approved by their head man here, and after that when they arrive at Liverpool, they are then examined

by the official appointed by the Government, and I do not know whether they would relax that or not.

3492. I ask the question because the suggestion has been made from the Government Bench in the House of Commons during the last few days that they probably would be satisfied with a Government test?—Oh, I should say they would; I should say so.

3493. You think they would?—Yes.

3494. The only other question I wanted to ask you was this; I was rather surprised at the answer you gave, I think it was to Major Dunne, just now with regard to the 15-mile radius. You have not heard any serious complaints, at any rate in your district, as regards this question of radius?—You see we have not had it in our district; I have not personally come across anybody who has felt the restrictions. I know there has been a good deal of agitation in the particular districts where it has occurred. Fortunately, as far as I am personally concerned, we have not had it anywhere near us.

3495. (*Mr. Hinds, M.P.*) I have only just one or two questions, sir. You believe that early notification of this disease is desirable for foreign countries; that is our Consular service may be used in notifying this disease as rampant on the Continent?—What I attach importance to is to letting foreign Governments know to what extent it does exist here when we have got one case, so that it should not be exaggerated into the suggested fact that it is all up and down the country, and people abroad get that impression.

3496. Yes, and on the other hand when there are infected areas in those foreign countries our Consular service may be used to notify us to what extent it is there?—Yes; I do not know that that is very valuable to us.

3497. It is the suggestion which was made to us here. With regard to all these various articles that you have mentioned here as being a probable source of carrying infection you do not put much weight on this plaiting of straw. It is possible it does not come in contact with animals to a very great extent?—No, I put it down to see how it is conveyed from the port, whether it is conveyed in trucks and those trucks not thoroughly disinfected before they are used for farm produce.

3498. But in this country it is conveyed in big crates, is it not?—I cannot tell you.

3499. It is used mostly for making hats and that sort of thing?—But it must come from farms, naturally.

3500. But do you think really it is practicable to do away with this packing hay and straw?—No, certainly not; I do not say to do away with it, but I say what conveys it in the shape of trucks should be thoroughly disinfected before being used for agricultural produce. It is a source of danger because the straw must come from farms and you see there is pretty nearly 1,000,000l. of it.

3501. In regard to your suggestions, you say labouring men arriving from the Continent should if possible be disinfected at the port of landing. That is when the disease is prevalent?—Well, the Irish people, I believe, disinfect all cattlemen coming over from England arriving at the Dublin ports. They put them into a place and they are disinfected before they are allowed to go. They have kept it out you see. What they have been able to do is worth studying; that is the view I take of it.

3502. And you think our young veterinary surgeons do not know the disease?—I cannot see how they can; they have not had the chance, fortunately the majority of them have not.

3503. (*Mr. Nunneley.*) You have given us here a long list of things that may be a source of infection, bringing it into the country?—Yes.

3504. I see you have not included any dairy produce, milk, butter or anything of that sort. Is that because you do not consider that dangerous, or that you did not think of it?—I thought I had mentioned milk.

3505. I do not see it?—Oh, yes, I consider milk is, but curiously enough I could not find it in my Returns.

3506. Dairy products, you know, butter, margarine, and so on, are imported largely?—Oh, yes, I know they are.

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3507. Do you not consider them?—Oh, anything that comes from a farm must be a possible source of infection.

3508. I suppose you know that butter can be, and is, made from milk of cows that are suffering with the disease?—Oh, undoubtedly.

3509. I should have thought you would have put that down as one of the most likely sources; I see you have not mentioned it?—No, I have not.

3510. With regard to the hay and straw for packing, I think you rather suggested that that should all be burned?—Yes.

3511. Can you tell us how that could be carried out; how that could be enforced?—Well, you would enforce it by a penalty, the same as you would enforce the notification of anything.

3512. You yourself say it goes to all country towns?—Yes.

3513. I suppose you know that all country grocers, ironmongers, furnisners, house-furnisners, everything of that sort, receive foreign goods packed in hay and straw, I suppose?—Yes.

3514. Could you follow every consignment and have it burned?—No, you would have to pass certain Regulations. There is a Regulation in force that everybody should notify every pig that dies of swine fever, I do not imagine for one moment that everybody does; you can only penalise them for not doing it.

3515. Would it not be much easier to prohibit the packing of goods or to prohibit goods coming packed with hay and straw from these countries?—What substitute have you?

3516. We have had it in evidence that there are substitutes?—That would be better still.

3517. Wood shavings and so on?—You are getting straight upon it.

3518. You spoke of having unofficial inspectors at the foreign ports to see that things should not come in without our Customs House officers knowing?—I mean to watch the ports; it may throw some light on something that is put on board.

3519. You really think that unofficial inspectors, not in uniform, would be able to get so much into the ships and among the cargo being packed as really to examine what is being put in and what is not?—The smart inspector would find out.

3520. How long would he be before he was known as an inspector and told to get out of the way? There is one paragraph I was rather struck with in your précis in which you speak of hares having been brought in alive and afterwards found dead and having the disease. You only give that as a report from a paper. Do you know that from your own knowledge?—I do not. It is cut from the *Farming World* of 20th November of last autumn.

3521. This last year?—Yes, and the letter you have got.

I think our veterinary witnesses have said that hares cannot have the disease, most positively.

(*Chairman.*) They can carry it, but they cannot have it.

(*Mr. Nunneley.*) But in this case they say the hares were found dead suffering with the disease.

3522. (*Chairman.*) That is only a report in the paper?—It is a letter to the editor.

3523. (*Mr. Nunneley.*) That is not your own knowledge?—No, but I thought it was the right thing to bring it before the Committee, having seen it in print.

3524. With regard to the veterinary surgeon being instructed, I suppose you know that all veterinary pupils are instructed in the symptoms in theory?—Oh, undoubtedly.

3525. You say a certain number; have you thought what number would be required; would one or two in a county be any use?—Oh, yes, one in a county is quite enough.

3526. How would he come in contact with it?—How would he?

3527. Yes?—He would only have to travel on the Continent; he would very soon come in contact with it.

3528. How, in England, would he be brought to see it, because you know the moment it is suspected, whoever suspects it, whether the owner or veterinary sur-

geon, has to communicate with the Board of Agriculture?—Quite so.

3529. They send their veterinary inspectors who do know it down at once?—Yes.

3530. It would be 100 chances to 1 against these one or two veterinary surgeons being called in?—Suppose you get two or three simultaneous outbreaks, your head man from here could not be in three places at once; you would not be able to deal with it quickly. There can be no harm in having more men who have actually had experience and seen it.

3531. I do not see the advantage of it, unless you instruct every veterinary surgeon, because unless you had every veterinary surgeon instructed, it would be a great chance if the one who happened to have been instructed was called in?—No, you might have one from the nearest county.

3532. The danger to my mind is not in dealing with it after it is once known, that can be done; it is realising that it is foot-and-mouth disease quickly enough. Personally, I cannot see how one or two more veterinary surgeons in the county would enable you to realise and know that it was foot-and-mouth disease quickly?—I understand you get a great many scares now.

3533. Some?—That would minimise the work of the head official very largely.

3534. You spoke of this Experimental Station. You say now there is a danger of our getting it from the Continent through birds or anything of that sort. Would there not be an extra danger if you had an Experimental Station?—Not a properly controlled Experimental Station.

3535. And you spoke of packing, if it did bring it in?—Yes.

3536. How do you contemplate dealing with that?—In the control station.

3537. But you might take 500 consignments of bedding there and not get it?—More particularly in grain, I think, Russian oats and maize and all these other things, cake; they come direct from countries where they have foot-and-mouth disease.

3538. But if you tried some 50 different consignments and did not get it, would that prove to your mind that grain did not bring it?—No, I do not say it would, but you have to make a good many experiments to prove anything.

3539. (*Mr. Richardson Carr.*) I take it, going to foreign parts and not having any very big outbreak in England lately, you think that is all the more reason why we should do everything we possibly could to keep it out?—Yes.

3540. You feel that?—I feel that.

3541. It is the fact of being comparatively free that you think is more important?—I would like to mention that I have one or two letters from South Africa saying that they are getting stock from Australia—I am speaking of from South Africa—owing to the fact of the prohibition against this country they could not wait any longer.

3542. Unless we do keep it out, not only will it affect the future, but it will deter anybody contemplating stock-breeding?—Yes.

3543. And you also feel, I take it, that the fact that Jersey and Ireland being so comparatively free, it is most important that we should find out everything they do that may stop it, even if we are not able to carry out everything in detail that they do, so that we know where we are?—That is my view, that I think you should go very fully into any notices or regulations that they enforce.

3544. With regard to the area, the 15-mile radius, although you think it might be an inconvenience for some people, you certainly think it would be much better to keep on with that rather than relax, and so run the slightest risk?—I would rather maintain that area.

3545. You would rather maintain that than run the slightest risk, would you not?—Yes.

3546. In regard to this packing we are talking of, do you not think it also happens that the people who get the packing not only use it themselves in most country towns, but all the manure goes out to the farms, and they could get it in that way?—Yes, very easily.

3547. Do you think there is any risk about these

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hides? I do not understand the process of tanning. Would there be any possibility of any refuse getting into the ditches or the drains that might go to the farm?—I should hardly think so.

3548. You do not think they would?—No, I do not think so.

3549. With regard to the quarantine case which you mention, and which I know about, that one in Liverpool, you will admit that although it was agreed it was a tremendous trouble to get that done?—Oh, yes, and it was a very costly thing, too.

3550. It was very costly; it was not at all easy?—I mean all these things are prohibitive to business in the case of a man of moderate means.

3551. It has been told us in evidence—we have had suggestions—that the virus of this disease lies dormant for a great many years. I see you give an account?—I was very much struck by a letter signed by a man named Orum, which appeared in the *Farmer and Stock Breeder* of September the 18th, 1911—I think you have got it in the précis—stating that his father had had it for some years, and then in 1900 they pulled up the dairy floor and had the stuff from under the stones taken out and put into the cow yard to be carted away, and when the cows came to be milked at night they were like mad animals about “the stuff,” and inside a week they had foot-and-mouth disease. That rather pointed as far as I could see, that possibly the virus had remained active during that period. I know it has been suggested that the outbreak in Somerset was more or less clearing out the rhynes and throwing that on the field, and I believe the outbreak did occur in one of these particular fields.

3552. And with regard to the packing, of course, if anything like wood-wool, or anything could be found that could be practically used as a substitute for hay and straw, you think that would be a good thing?—I think that would be most desirable.

3553. And I take it in face of all this disease abroad you think it would be a very desirable thing to admit any foreign store cattle into England?—Oh, I think it would be suicidal.

3554. With regard to this experimental station, I was rather surprised to hear you suggest that. Do you not think that if we take to breeding foot-and-mouth disease anywhere within the range of the British Isles, we shall have a very great difficulty in persuading foreign countries to believe that we are sufficiently careful for them to allow our cattle to come in, even those who want our cattle; and if there are some who are not very anxious, will they not be still more difficult to deal with if they know we are breeding foot-and-mouth disease?—Well, if we can successfully keep it out I would rather do away with the control station altogether.

3555. You think there would be a risk of that?—I am only suggesting this in case we are unable to get to the bottom of it.

3556. You think there would be a risk of foreign countries?—There might be that risk; I think it is a small one.

3557. If they object to take the cattle now when we are trying to stamp it out, would they not still more object to take cattle when we are endeavouring to keep it in, so to speak, even in the restricted area?—That might arise in the minds of some Governments.

3558. (Mr. Morrison.) I understand you to advocate the appointment of some smart veterinary men to watch the ports of embarkation?—I did not say veterinary men.

3559. Not veterinary men?—No, I said an ordinary inspector—a smart man. I did not say a veterinary surgeon.

3560. Do you think that a man who is not a veterinary surgeon would do all that you want?—It is simply to watch things that he thought of a dangerous nature. I do not think you want a veterinary surgeon for that purpose; in fact, I did not suggest it.

3561. Do you suggest that all the ports of any importance should be watched in that way?—All the ports of the Continent, the dangerous ports from the Continent, that is what I said, because we evidently imported from the Continent, and there are not a great many ports shipping here.

3562. How many do you think would require to be watched?—I should think half a dozen. I do not know.

3563. Would it not satisfy you, supposing this were advocated, to appoint only two or three men in order that they might be sent—whether their reports were going to be of any value is another matter—would it not be advisable to begin with only two or three men and see how the thing was going to work?—Yes, I should think so. Hamburg is a very dangerous port. There is a tremendous lot of shipping from there, and you are right in the middle of the foot-and-mouth disease zone, you may say.

3564. You would strongly recommend the appointment of two or three men almost as an experiment during outbreaks?—I certainly recommend it very strongly.

3565. No doubt you have a large experience of the people who come, say from cattle markets in France to cattle markets in this country, if there are many people of that kind?—No, I do not; they do not come our way, at any rate. I understand they get some down in the south of England, but we never see them.

3566. Do you think many people attend markets on both sides of the Channel?—No, I do not.

3567. Do you think it occurs sometimes?—I know some sheep-dealers come across from France to the southern counties, because they were in one of the markets this autumn; that is a fact, I believe, proved.

3568. Yes, we had evidence about that, that herdsmen or cattlemen cross in the same way as between Scotland and Ireland, say?—Oh, nothing like the number.

3569. But they do cross?—They do cross; it is quite possible.

3570. But you do not know of your own knowledge?—No, I do not.

3571. You would not advocate provision for disinfecting these cattlemen unless you were quite sure they existed?—No, that is what a man would find out. If you had an inspector he would find out whether people of that class were coming across.

3572. That is the extent of your recommendation?—That is one of the things you would find out; at present you are entirely in the dark.

3573. Your recommendation is that we make inquiry, I suppose, as to the amount of intercourse between the cattle markets on both sides of the water?—I think so; that would be very desirable.

3574. If we found out there was such an intercourse, you would go the length to suggest that there should be a disinfection of the clothes of the people?—Certainly. I believe it is quite simple, pop them into a chamber, something of that sort.

3575. The difficulty that occurs to me is how you would find out the proper people to disinfect. Have you any light to throw on that difficulty?—Oh! it is not easy. If there are any of that class coming over there must be a source of danger.

3576. Yes, quite right?—It is pretty clearly proved that it is conveyed from place to place by servants on this side, and if it can be conveyed from this side it can be conveyed from France to this side.

3577. Still, you do not suggest any practical way in which this idea could be carried into effect?—No, but your inspector would be able to find out whether there was any great intercourse of that class.

3578. And you do not think it is an insuperable difficulty if it were put into the hands of the port to carry out?—I do not think so.

3579. As regards our local practitioners, everyone agrees that it would be a good thing if they, at least once in their lives, saw an animal affected by the disease. The difficulty is how to bring this about. Do you know if the County Council, for instance, have power to send at their own expense, say, a few of those in their employment, to Europe for a week or two?—I cannot speak whether they have the power. I should think they had, but I cannot speak from my own knowledge whether they have the power or not, but I presume they have.

3580. Supposing they have the power, do you think that would meet the difficulty?—Supposing county councils were selecting or offering to pay travelling

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expenses to, say, three or four veterinary surgeons in their employment every year that they might witness the disease in France, say, would that sufficiently educate them up to detecting it when the time came?—Yes, but I do not see that any county wants more than one or so of these people; I do not think you want a lot in each county.

3581. You think one in each county?—I think so, because when one man is away you could always get the neighbouring county man to come. The Board has a representative in each county more or less, a head veterinary surgeon; he should have the opportunity of seeing it I think.

3582. I think they all know the disease; I was thinking of local practitioners who do not know the disease. Do you not think it is important that they should have an opportunity?—Well, the question is, where would you stop? You would have to send the lot, and how will you select them? Whom are you going to send out?

3583. I would suggest that travelling expenses might be offered by the county councils to a certain number, and if more than the number applied, then they would be selected by the county council once in so many years. I wanted to know in the first place if county councils had that power; and, in the second place, if they had not the power, would you recommend that they should be given it, as a practical man?—You are assuming we are going to have it in this country for some years to come, are you not?

3584. No, I am assuming we are not going to have it here, because if we had it here they would not have to send them abroad. The suggestion is, they do not know the disease and we want to show them the disease?—Yes.

3585-6. (*Chairman.*) About this question of disinfection of hides: I think when I first asked you a question about it you said at the port of debarkation?—I did.

3587. I agree with that strongly; then you mentioned to us about what America does about this disinfection?—Yes.

3588. Well, I have had this report of the fresh decisions in America, and I find in America that they do disinfect at the port of embarkation?—Yes.

3589. Except from this country; from all other countries except our own they do disinfect at the port of embarkation, and it is done through the Consular Officer?—Yes, quite so.

3590. In your opinion, would that be a good plan for us to adopt in this country?—Oh, splendid, I think.

3591. Disinfection of all hides and everything at the port of embarkation?—I think it would be a very wise precaution and one of the best you could take.

3592. If America can do it we can do it?—Yes.

3593. There is another question I want to ask you about what Major Dunne or one of the other members asked you; about this hay and straw for packing. You think that it is a source of infection; it may be a source?—I say it is a possible source of infection.

3594. A possible source, quite so. We have had it in evidence from the Customs about this, and we asked whether it would be possible, if we prohibited that hay and straw, if they could carry it out, and we have had a private communication from them this morning to say—we are to have a notification from them—that in their opinion it would be impossible to carry such a thing out?—To prohibit the straw coming in?

3595. To prohibit the straw coming in?—Yes.

3596. Because they could not manage it?—They might have it burned.

3597. That is a different question. You mean burned when it arrives in this country and when it is unpacked?—When it is unpacked; the people who have it.

3598. You said in answer to Mr. Nunneley that you think there would not be any great difficulty in making it penal. I am afraid you would have very great diffi-

culty in our country parishes, having all these little packages coming in, to carry it out?—I do not see why you should; it is precisely the same as carrying out any other regulation or order.

3599. But do you not know that in every parish in the country these packages come in with this foreign hay and straw, and I am afraid it would be difficult to carry out, to make it penal?—It may be difficult, but there is no reason why you should not try to because it is difficult.

3600. Sir Charles Rose says, what about insurance with all these fires going on? Two other questions; you have been asked about this experimental station. You are in favour of an experimental station, are you not?—I rather was, but I confess what Mr. Richardson Carr put rather modified my views a little bit.

3601. That rather modified your views a little bit; I rather expected it would. But supposing that we had an experimental station far off in India, do you think that would be a good thing?—Oh, it must be a good thing, no matter where you have it.

3602. That would be safe?—That would be safe.

3603. It would not affect the point that Mr. Richardson Carr raised, would it?—No.

3604. Well, one other word, and that is about this veterinary question. Personally I feel rather strongly that there is so little known by our country veterinary surgeons about this. We had a case before us of which we are going to have evidence presently, of a local district where a local veterinary surgeon said one thing and where the veterinary surgeon of the local authority said another. Well, you would suggest that one veterinary surgeon anyhow in the county should really know what foot-and-mouth disease is?—Yes.

3605. Would it not meet your point if it were recommended that the veterinary surgeon who is appointed by the local authorities should be approved by the Board of Agriculture as knowing what foot-and-mouth disease is?—Yes, that would meet the case; I think that would be a very good thing to do.

3606. (*Mr. Bathurst, M.P.*) There is one question I should like to ask, and one only. In your précis you suggest that the disease might be communicated to a farm by tan from a tannery; what was in your mind when you said that?—I was thinking of this: when the hides came into the particular tannery I speak of in Shrewsbury, tan goes from that tannery to various farms. I thought if doubtful hides went into a tannery the disease might be carried that way.

3607. You have no reason to suppose that the mode of treating the hides would prevent the disease being carried in that way?—Of course the disease would be largely in the hair, would it not?

3608. Yes, certainly.—More or less it seems a source of danger, because I know tan does go from this particular tannery to the various farms. Especially in a year like this when we are short of litter; and it appeared to me a possible source of infection if you got doubtful hides into a tannery and the tan goes from that particular tannery to various farms in the district it might introduce the disease. Of course, if you disinfect the hides as you are suggesting now that danger will be done away with.

3609. In your experience, is tan largely used for the purpose of litter?—Oh, a great many people use it for their horses; lots of people do, especially in a year like this; there will be a good deal used because we are really very hard up. Our straw is making 4*l.* a ton regularly.

3610. I am perfectly aware it is used in horse stables; I rather wanted to know in my mind how it is used with cattle?—It is put under young bulls very largely.

3611. What I want to know is whether, as a matter of fact, tan can convey the germs of the disease?—I cannot tell you whether it would kill the germ or not; I cannot speak on that point.

(*Chairman.*) Thank you, Mr. Mansell; many thanks.

The Witness withdrew.

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Superintendent W. H. WILLIAMS.

[Continued.]

Superintendent W. H. WILLIAMS, Bridgwater, Somerset, representing the Somerset County Council, called in and examined.

3612. (*Chairman.*) You have come to represent the Somerset County Council, I believe?—Yes, sir.

3613. We have heard a good deal of the action you took in this outbreak at Bridgwater, which was most excellent in every way, and we should just like to hear one or two things from you about it. First of all, you say in your *précis* that Mr. Bovett was the veterinary surgeon at Bridgwater who was first called in by Mr. Rawle, was he not?—Yes.

3614. He was called in privately by Mr. Rawle?—Yes.

3615. And he proceeded to the farm, and from an intimation he gave you, you put a constable in charge?—Yes, sir.

3616. And then, the day after, I think, was it not, Mr. Harry Potts, the veterinary surgeon of the local authority, came in?—The same day.

3617. And he said that he did not think that it was a case of foot-and-mouth disease?—Yes, sir.

3618. Mr. Potts, the local authority's veterinary inspector, considered it was not foot-and-mouth disease?—Yes, sir, he did.

3619. And he was overborne by the Board of Agriculture inspector when he came down?—Yes, sir.

3620. The first veterinary surgeon's opinion, called in privately, was upheld?—Yes, sir.

3621. How long have you been in your present position?—Four years.

3622. Have you ever had a case of foot-and-mouth disease in the county before?—No, sir.

3623. Have you ever seen cases of foot-and-mouth disease before, or have you had any dealings with it before?—No.

3624. You have never had to take action at all?—No, sir.

3625. Your own opinion is, that if an animal is found affected with foot-and-mouth disease, it should be killed at once by the local authority, so as to lessen the likelihood of the disease spreading?—Yes, sir.

3626. Do you mean before it is even reported to the Board of Agriculture?—Yes, sir, if necessary.

3627. Now, in a case like this; supposing the opinion of the veterinary surgeon of the local authority had been taken that it was not foot-and-mouth disease, you would have been in a funny state in Somerset, would you not?—Oh, yes, I should. I could not do it at present without authority for doing so, of course.

3628. You think that there would be less risk if at once the suspected animal was slaughtered?—Oh, yes, there would be. Mr. Jackson, the veterinary surgeon that came down from the Board said there is an object lesson for us to see the saliva hanging from the mouth right down to the ground, and then the wind would take it and blow it away in the air for 10 or 12 yards, and then break off and go away with the wind goodness knows how many miles. That going on for some hours would certainly run the risk of conveying the disease.

3629. How long after was it that the animal was slaughtered in this particular place in Somerset?—Two days.

3630. Before the veterinary inspector could enable it to be done?—Yes. It was reported on the Thursday, and the slaughter took place on the Saturday.

3631. There is no trace of how it came in?—No, sir.

3632. There had been no purchases or anything like that? Is there really a feeling down there that disease was contracted by the cleaning out of these rhines?—Yes, sir; people generally think that it is very possible.

3633. That it has lain dormant for 30 years since the disease last existed there?—Yes. The soil is rather spongy. I do not know if that would have a tendency to preserve the disease or not, or whether it would act as a culture for the disease. It is a soil that small seeds do very well in.

3634. Well, the Committee have heard a good deal of the prompt action you took, and we are very grateful for the action you did take?—Thank you, sir.

3635. (*Mr. Nunneley.*) You say it was two days

before the animal was killed. I suppose it was killed at once, as soon as the Board of Agriculture inspector had pronounced it to be foot-and-mouth disease?—No, sir; the next day.

3636. Was there unnecessary delay?—I do not think so, sir.

3637. You could not kill it that day, could you?—I do not know that it could not have been done; it was not done.

3638. It rather struck me, as I understand it, the local veterinary surgeon saw the animal on Thursday morning and pronounced it to be foot-and-mouth disease?—Yes, sir.

3639. Then the County Council Inspector saw it on the Thursday afternoon and said it was not?—Yes, sir.

3640. But, in spite of that, you wired to the Board of Agriculture?—Yes, sir, I had wired.

3641. Before the local inspector had seen it?—Yes.

3642. Before he had said it was not?—Yes.

3643. You wired on the report of the first veterinary surgeon?—Yes, at once.

3644. A very good thing you did. Then, the Board of Agriculture inspector saw it on Friday?—Yes; Mr. Jackson came down and saw it on the Friday, and then he wired for Mr. Stockman and he came down.

3645. Mr. Stockman did not see it till the afternoon?—No, sir.

3646. It was not directed to be killed till he had seen it?—No, sir.

3647. The first Board of Agriculture inspector did not order it to be killed on his own authority?—No.

3648. (*Mr. Hinds, M.P.*) You said you told Mr. Rawle to boil this milk?—Yes, sir, I did. I told him not to make any use whatever of the milk unless he boiled it. Next morning I asked what use he had made of the milk. He told me he had given it to the pigs. Ten of these pigs were found to be affected the next day.

3649. I attach some importance to your statement that the local authority should have power to have the milk destroyed, because Mr. Rawle, in this case, did not carry out your instructions?—Yes, sir.

3650. (*Mr. Bathurst, M.P.*) Has there been much feeling aroused amongst the farmers by insisting upon this 15 mile radius?—No, sir.

3651. There has not?—No, sir. Generally speaking, farmers complain of the Regulations, but they were well-content, with a very few exceptions. I do not think you could do otherwise than stick to the 15 miles with safety.

3652. That is not quite what I was asking you, but you say the farmers, even in the Yeovil district, were well content?—I do not know much about that district. They seemed a little more dissatisfied, but in the Bridgwater district, where we had the trouble for so long, they were very loyal indeed, and they quite realised that it was for their ultimate benefit.

3653. Was there any outbreak within 15 miles of a previous outbreak in Somerset?—The outbreak that occurred in the Yeovil division was only about nine miles, as the crow would fly, from where we had the outbreak in the Bridgwater district. It is only about nine miles straight across. It is quite possible the wind may have taken the saliva that we saw there. There is no doubt that the cases were contact cases, that is to say the 10 cases that occurred in the Bridgwater division we could practically connect together, if only through cattle being moved and coming in contact with another lot. If they only met on the way, they fell ill with the disease. I think we are quite satisfied that all the cases that occurred were contact cases.

3654. (*Sir Harry Verney, M.P.*) I suppose Mr. Potts is a senior veterinary surgeon to Mr. Bovett, from your point of view, Mr. Potts being the representative of the Local Authority. The point I wanted to get at was this, that if it so happened that Mr. Bovett and Mr. Potts had been with you together in the first instance and they disagreed, would you have been able to telegraph to the Board, in spite of Mr. Potts?—Oh, yes, I should have been at liberty to have done that.

3655. And would you have done so probably, as

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[Continued.]

matter of fact, in the case of disagreement; you would not take the advice of the man who apparently would be the senior of the two?—Yes.

3656. You would have telegraphed in any case?—I should have telegraphed in any case. I told Mr. Bovett afterwards what Mr. Potts had said about the case; I do not think he was very certain about the matter.

3657. (*Sir Charles Rose, M.P.*) In view of what you call the object lesson that you had, that is by practical demonstration, seeing the saliva being carried on the wind, do you think it would be wise in a district like that to in any way narrow the 15-mile radius, or do you think it would be desirable to extend it?—I should think, sir, 15 miles is plenty far enough.

3658. You do not think it could be carried a greater distance than that?—The possibility of it being carried to a greater distance, one could not say, but I should not think there would be any safety in lessening the distance.

The Witness withdrew.

Mr. J. EGERTON QUESTED, Chairman of the Executive Committee of the Kent County Council, called in and examined.

3664. (*Chairman.*) You have kindly consented to come and give us short evidence on behalf of the Kent County Council?—Yes.

3665. You have not given any précis, but there are one or two things you would like to allude to, I understand?—Yes.

3666. First of all, have you had any foot-and-mouth disease in your county at all?—I think not since 1902; I believe in the spring of 1902.

3667. Nearly ten years ago?—Yes.

3668. You have had nothing since that?—No.

3669. Are you Chairman of the Executive Committee of the Contagious Diseases Committee?—I am.

3670. Your veterinary inspectors are appointed by your County Council, of course?—Yes.

3671. Would there be any objection on the part of Local Authorities, supposing this Committee recommended that the veterinary inspector of the Local Authority, before he was absolutely appointed by the Local Authority, should have the approval of the Board of Agriculture? Do you think there would be any friction?—I do not think so. I do not see any objection.

3672. You do not?—No, I think the idea would be to get a more qualified man, a thoroughly qualified man.

3673. Why I ask you this is because we have found from evidence that many of the veterinary profession, through no fault of their own, have so little knowledge of foot-and-mouth disease?—Yes.

3674. And it would be a good plan if they had some more?—I believe that is so. A good many of that profession would not have seen it unless they are men of considerable age in our county.

3675. Are you satisfied, as far as you know, although you have had no cases yourselves lately, with the procedure of the Board of Agriculture?—Quite.

3676. Are you satisfied—it has been mentioned several times although it is outside our reference—with the area; the 15-mile area?—In the event of an outbreak?

3677. Yes?—Well, I should think that would depend upon circumstances considerably. When we had that outbreak at Udimore in Sussex last year, the infected area embraced all the area of Romney Marsh, and I do not see how it would have been possible to have curtailed it in any way.

3678. Had you anything to do with that Sussex outbreak?—Well, we were included in the area scheduled; all Romney Marsh was.

3679. Quite so; that included parts of Kent?—It was a source of very great inconvenience, of course, to the growers, and caused considerable annoyance.

3680. Was there much feeling expressed about it?—There was a certain amount, but I do not think anything could possibly have been done differently.

3681. Then really I may take it, as far as your experience goes, you are perfectly satisfied with the action of the Board of Agriculture?—Quite.

3659. (*Sir Bowen Bowen-Jones.*) I just wanted to ask you, had you visited the farm after Mr. Bovett's Report, before you went there with Mr. Potts?—No, sir, I had not; we went together.

3660. Notwithstanding Mr. Pott's decision that it was not foot-and-mouth disease, you put the restrictions into force?—I did, sir; I served Mr. Rawle with the restriction notice.

3661. Had you any legal power to do that?—Yes, sir.

3662. When the veterinary surgeon of the local authority said there was no suspicion of foot-and-mouth disease?—But I had already telegraphed to the Board, sir, and I felt persuaded that I should carry out the Regulation. Mr. Potts quite agreed with me at the finish that it was decidedly a case for the Board to inquire into.

3663. When you have a case of reported foot-and-mouth disease, I suppose you would fall back on his report as being sufficient?—No, sir, I should not do that.

3682. And there is nothing you could suggest as a practical man?—As an improvement on the present restrictions?

3683. Yes?—I do not think so; of course, the proof of the pudding is in the eating of it. The restrictions by the Board confined the disease to that centre where it broke out, you see, at Udimore, and had there been any relaxation on the part of the Board to have let it spread into Romney Marsh, I do not know what would have been the consequence. There were hundreds of thousands of sheep there during that particular period of the year, and I think the Board are to be congratulated on keeping it confined to that particular centre.

3684. Have you ever had foot-and-mouth disease yourself?—Yes.

3685. On your own farm?—Yes.

3686-7. How many years ago was that?—1891.

3688. Had you any idea then or any suspicion of how it was brought in?—Never. I had four hundred ewe lambs; I bred them myself; they had never been away; there had never been any stock in contact with them, and it was assumed the disease was brought to them by live cattle being brought to Shorncliffe Camp.

3689. You are close to Shorncliffe Camp?—We are close to Shorncliffe Camp, and these animals being brought to Shorncliffe for slaughter passed by these sheep. There was only a wire fence separated them.

3690. That was since the days of the killing of animals at the port of debarkation?—Yes.

3691. But since those days you have had nothing?—No.

3692. (*Mr. Nunneley.*) I suppose, from your experience of 1891, you would not be at all in favour of relaxing the restriction with regard to the importation of live animals?—No, certainly not. I think you would run a very great risk if you allowed the importation of live animals from the Argentine, where there is disease running rife.

3693. Would you allow them from other countries?—Certainly not, where there is any disease existing.

3694. With regard to the appointment of local veterinary inspectors: you say you would not object to your County Council's appointment of them being subject to the approval of the Board of Agriculture?—That is so.

3695. You would not appoint a man who has not the proper qualifications?—No.

3696. You would not put on a man who was not a member of the Royal College?—Oh, certainly not; but there are many members of the College who have had no experience whatever with the disease.

3697. Do you suggest the Board of Agriculture would only confirm the appointment of somebody who had had experience?—I could not say that.

3698. My point is rather this: If it were thought necessary that our County Council veterinary inspectors should have special knowledge of the disease, could not

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the County Councils see that they have that knowledge quite as well as the Board of Agriculture?—Oh, they could see that.

3699. Would not that be met equally well by issuing instructions to the County Councils that all inspectors must have some knowledge of it, as putting it in the hands of the Board of Agriculture?—I do not know that we have appointed a veterinary inspector since I have been Chairman of our Committee, but that would be one of the necessary qualifications. Of course, the question would be put to him whether he could diagnose the disease in the event of an outbreak.

3700. Personally I do not see the advantage of the Board of Agriculture's confirmation; they could only look to the degrees of a man; they could not examine him?—Quite.

3701. And would not your County Council be as careful as necessary to see that you have a good man?—Oh, we should take every possible care; there is no doubt about that, every possible care, and select the best man we could find.

3702. (*Chairman.*) Yes, every local authority might do that, but they might in cases make mistakes, might they not?—Quite.

3703. (*Mr. Hinds, M.P.*) Would there be any value at all in issuing any literature to agriculturists on this disease, describing the disease? You say veterinary surgeons and farmers do not know very much of it?—Well now, there has been rather an open question. Let me tell you the facts: It was reported in the papers at Wittisham about two months after we had this outbreak at Udmore another outbreak of foot-and-mouth disease, and I believe the suspicion was somewhat under a cloud, for, perhaps, I would not say days, but a few hours, between 24 and 48 hours, and of course it is very detrimental to the district, and also to those who own stock in that particular district.

3704. This literature would be only waste paper that the Board of Agriculture issued, giving a description of the disease that farmers may know?—I think it would help considerably, because there are a good many people who have never seen it and have no idea what it is.

3705. Are you of opinion that local authorities should have the power of slaughter; that is, when your local authority's veterinary surgeon said it was foot-and-mouth disease, would you advise that power should be given to the local authority to destroy the animal?—No, I should not, because I think that depends entirely on circumstances. Supposing you had an outbreak in a very valuable flock of sheep or a very valuable herd of cattle, I take it that the Board would seriously consider

as to what they should do before they issued an order to destroy all these animals. As to compensation, why, it would be a very great expense. I hardly think it would be possible to arrive at a fair sum for compensation. You might take a very old-established shorthorn herd—two hundred head; it might be a most serious thing.

3706. (*Mr. Morrison.*) Can you tell me how many local veterinary inspectors you have under your executive?—I cannot for the moment, sir.

3707. Can you give me any idea how many you have?—Well, I can give you an idea, I should think we have about 15 or 20.

3708. Then each one of these inspectors has his own district?—Quite.

3709. And in that district there is probably another veterinary surgeon who is not appointed by you at all?—Oh, yes.

3710. Suppose the appointment of these men were subject to the veto of the Board, would not that lead to a difficulty if you found that you wanted to change your man, discharge a man and put another man on; would it not discourage the local authority from putting a man off that they did not quite approve of?—I do not see any difficulty.

3711. You have never had to do that as matter of fact?—In the event of an appointment having to be confirmed by the Board, whether the Board would have to be consulted before the man was discharged from his duties—

3712. (*Chairman.*) That has not been suggested?—No.

3713. (*Mr. Morrison.*) That is the case as regards county analysts?—That is so.

3714. And I suppose he would be in the same position?—I do not know whether the whole thing would come under the same heading. Various Government departments, the Local Government Board, have to sanction the dismissal of various officers under several authorities.

3715. There must be a very great number of these local inspectors throughout the kingdom. Do you think that the Board of Agriculture would in each case be at sufficient pains to find out more about the man than the local authority itself would find out. Would they be better informed on the subject?—I do not think that they would be better informed unless he was examined by an expert.

3716. (*Chairman.*) That is all. Many thanks.—Thank you, sir.

The Witness withdrew.

Mr. ROBERT CANTRELL, I.S.O., Chief Clerk of the Department of Agriculture and Technical Instruction for Ireland, called in and examined.

3717. (*Chairman.*) You are the Chief Clerk of the Department of Agriculture and Technical Instruction for Ireland, are you not?—Yes.

3718. You have come over at our request to give us some evidence on this question of foot-and-mouth disease?—Yes.

3719. When did you have your last attack of foot-and-mouth disease in Ireland?—In the year 1883.

3720. The last outbreak?—Yes, the outbreak finished in 1884, but it began in 1883.

Only a few scattered particulars are available as to the existence of foot-and-mouth disease in Ireland prior to the passing of the Contagious Diseases (Animals) Act, 1878.

A retrospective report on the subject of animal disease generally, prepared in the year 1880, by the late Professor Ferguson, H.M.V.S., mentions, it is observed, that—

“In the year 1840 foot-and-mouth disease was prevalent in Ireland, but more so the following years. At first, its nature was not understood, it being generally thought that there was a connection between it and pleuro-pneumonia, most people, particularly graziers, although erroneously, believing that the latter disease was, in the majority of instances, a sequence of the former, with which, however, it had no connection whatever.”

“It affected not alone cattle, but also sheep and swine—even deer did not escape. It was also observed amongst domestic gallinaceous and other fowl, pigeons, even woodquits, also hares and rabbits.”

“The deer in the Phoenix Park suffered considerably, as also did some of the equine breeding stock turned out for stud purposes into the paddocks of Howth Castle.”

“In A.D. 1840 and 1841 foot-and-mouth disease prevailed throughout Ireland among sheep.”

“In 1841 and 1842 foot-and-mouth disease prevailed among swine in Ireland. This foot-and-mouth disease of swine was of then recent occurrence, and was generally believed to have been introduced from Great Britain.”

“In A.D. 1847 foot-and-mouth disease was very prevalent among swine in the South of Ireland.”

“In A.D. 1851 foot-and-mouth disease prevailed among sheep in the County of Galway.”

In point of time the next allusion to the disease in the Report relates to the year 1872, when the malady seems to have been very prevalent, the total record of outbreaks for that year having apparently been 14,854, and the total number of animals reported affected 215,927, comprising 152,573 cattle, 54,370 sheep, and 8,984 swine.

This wide extension of the disease may in part have

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been attributable to the belief which then seems to have been entertained by many graziers, that when the disease appeared in their neighbourhood the best policy to be followed was immediately to sell off all stock that could be disposed of for slaughter and then take steps to infect the remainder, so as to get any trouble from the malady over as quickly as possible.

No figures for subsequent years are forthcoming until 1878, in which year 103 scattered cases are noted as having occurred. The next year, 1879, has a record of 64 doubtful cases, after which Ireland seems to have been free from the malady for three years. It reappeared, however, in 1883 and spread widely, attacking 114,502 animals on 3,510 farms or other places, in 20 counties. It was suppressed in the following year, in which only 1,139 fresh animals were attacked, on 31 farms or other places, and since then, it has been unknown in this country.

The details as to animals attacked in the two last-mentioned years are as follows:—

3721. Have you had no outbreak since then?—No.

3722. None at all?—No outbreak since then.

3723. Your regulations as regards foot-and-mouth disease are very much the same as the English regulations?—Yes; the general Order for Ireland in regard to foot-and-mouth disease is practically the same as in England.

3724. Can you give the Committee any reason why Ireland has been so free from the disease for these last years when we have had here spasmodic outbreaks; can you give us any idea of the reason?—Well, it may be due to the precautions that have been taken by the Department to guard against its introduction.

3725. But your regulations are very much the same as our own, I understand?—I merely meant as regards the general Order relating to foot-and-mouth disease, as to the procedure when an outbreak occurs.

3726. Yes; I will come to that presently?—But we have a number of regulations in force that perhaps have the effect of preventing the introduction of disease into Ireland.

3727. You mean you have regulations which we have not in this country?—Yes. We have an Order in force which prohibits altogether the importation of ruminant animals from Great Britain except with the licence of the Department. That Order has been in force practically ever since the outbreak occurred in 1884.

3728. We have had it in evidence already that these outbreaks from the Continent come mostly upon the eastern sea-board, upon the south-eastern counties of England?—Yes.

3729. And that possibly we in England act as a buffer-state to you in Ireland; do you think that is likely?—That may be the case.

3730. If it is so that is one in favour of England, is it not?—If that be so it would be all the more reason for our taking the precaution of regulating or governing the importation of animals from England.

3731. England is of some use in that way then, if it is so?—Decidedly; we have no direct foreign trade in animals. We do not allow any foreign animals into Ireland except an animal occasionally for the Zoological Gardens.

3732. But you do allow in certain animals of a high class for breeding purposes?—Yes, those are allowed in from Great Britain.

3733. Have you always had that regulation that you allow certain animals to be landed for breeding purposes?—Always.

3734. From where?—From any port in Great Britain.

3735. Nothing from abroad?—Nothing. There are no foreign animals' wharves in Ireland, and consequently no foreign animals can enter.

3736. You have got a Hay and Straw Order, have you not; foreign hay and straw?—Yes, foreign hay and straw; exactly the same as the British Order.

3737. Have you got any other Orders as regards imports for feeding purposes?—No.

3738. Nothing?—No.

3739. Then I may take it really, Mr. Cantrell, your Orders and our own in this country are almost iden-

tically the same, are they not?—Yes; so far as steps are taken to prevent the introduction of disease from abroad.

3740. When were hay and straw in Ireland first prohibited?—Not until 1908; it was the same time that the English Orders were passed; that was after the Edinburgh outbreaks.

3741. When we were having these outbreaks here last year—as you know we had these six outbreaks in 1911—did you make any regulation about persons being disinfected who were coming across from England to Ireland?—Yes, in the case of the last outbreak in 1911 we did.

3742. I mean during that year?—Yes; and we have done so from time to time, not always.

3743. What do you do?—How do we disinfect?

3744. Yes?—A notice is first issued and put up at the various ports that all persons who have been in contact with animals on board ship in transit to or from any port in Great Britain would be required as soon as they come back to the port in Ireland to disinfect themselves and their clothes. The last time we put this regulation into force we only required those coming from ports on the Bristol Channel or from Plymouth to be disinfected, because the outbreaks were all in the Somersetshire and Devonshire areas. All these persons are very well known to the ship inspectors and the veterinary staff stationed at our cattle-exporting ports. There is a veterinary staff at every port in Ireland, as all animals going from Ireland to Great Britain are inspected and certified to be free from disease before they are shipped to this country.

3745. On this side?—Inspected at the port in Ireland before they are shipped from there to Great Britain; consequently we have a permanent staff of veterinary inspectors at these ports. Likewise we have a staff of ship inspectors who inspect vessels and see that the animals are properly penned and that the vessels are properly cleansed and disinfected in accordance with the regulations in the Transit Orders, which are the same on both sides of the Channel. Under these circumstances all persons connected with the cattle trade, the drovers, the dealers, the sales-masters, are perfectly well known to our men at the ports. On the arrival of the steamers at the Irish ports the vessels are boarded by the ship inspectors belonging to the department, and drovers and dealers are at once told that they must disinfect themselves and their clothing. There are disinfection boxes at each port. They are wooden boxes like those which are used as portable vapour baths. I have a sketch here if you wish to see it. The man enters the box, the door is closed on him. The box is about 5 ft. 3 in. in height, with an aperture on the top, and a cloth or towel is put round him to prevent the fumes of the disinfectant coming up through the opening. Then a sulphur candle is put in through a slide in one side of the box and lighted, and his clothes are fumigated for a few minutes with burning sulphur. When he comes out of the box his hands are washed with Jeyes' Fluid or carbolic acid in solution, and his boots are disinfected, and he is allowed to go away. In the case of the sales-masters, who do not use the same clothes in the markets in England as those in which they travel, they bring the clothes back separately and the clothes are put into the box and disinfected.

3746. You disinfect those people who come from an infected area, I take it; is that it?—Yes, it might be something more than that. It might be from any market; any person who had been in contact with animals in the south-west of England; any market or fair inside or outside infected areas.

3747. They have all to go through this operation?—They have all to go through this operation; and in the years 1883 and 1884, when foot-and-mouth disease was prevalent in Ireland, everybody who had been in contact with animals in any part of England had to be disinfected on arrival in Ireland.

3748. Had been in contact with animals in any part of England?—Yes. There were over 60,000 disinfections. I do not mean those were different persons; many were disinfected over and over again; 60,000 disinfections, and this procedure was continued until

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[Continued.]

some time in 1886, when foot-and-mouth disease ceased in England. Although it ceased in Ireland in 1884, we continued the precaution of disinfection until the disease ceased in England. On two or three occasions since we renewed the same method. We very seldom found any serious objections to it. I do not think we had to prosecute more than a few people for refusing to undergo this process.

3749. They do not mind it?—They soon got used to it.

3750. The fact remains that we in this country have had these outbreaks at different times and you in Ireland have been free since 1884?—Yes; then we have not a very large direct Continental trade. The greater part comes to us through England.*

3751. Through England? We act, as I said before, as a buffer?—Yes.

3752. What do you do when you get an outbreak of foot-and-mouth disease; what are your orders for foot-and-mouth disease; are they very much the same as ours?—I can tell you what was done in 1883 and 1884.

3753. I do not suppose you would alter them now?—We probably would do something more drastic now; We would slaughter in the first instance. We did not do so in 1883 and 1884 until the disease had nearly ceased. I can give you an account of what was done then if it would be any use. It is so far back it is ancient history.

3754. Yes, I think it is rather ancient history. Now, can you tell me, do you have many hides imported into Ireland, either dry or wet hides?—Not very many hides and skins.

3755. Are they dry?—I could not tell you. Here is the Department's report on the trade in imports and exports for 1910. It is only within the last few years that we have been able to tell what are the actual imports into or the exports from Ireland, because they were formerly all under the head of the United Kingdom; they were not set out separately for the different countries. Within the last six years they have been, and I see that in 1910 there were 10,279 cwts. imported. That is not very much.

3756. Very small?—Yes.

3757. You do not do anything about disinfecting them, do you, before they land?—No. Those would come from Great Britain.

3758. They would all come from Great Britain?—Practically all.

3759. And most of your imports of that kind come through Great Britain, I suppose; the majority of them?—Well, I might say the majority. There is a direct trade from abroad in various classes of commodities. There is also a direct trade in meat to Cork, and there is a direct trade from Holland in peat-moss litter.

3760. Have you considered restriction on that?—We have had it under consideration, but we have not done anything so far. There is no evidence that peat-moss litter ever conveyed infection, I believe. The imports of it are not large. In 1911 there were 2,712 tons imported. Nearly all of these came from the Netherlands. In 1904 there were 3,965 tons. It is used in stables.

3761. I may take it that most of your feeding-stuffs come through Great Britain, do they not?—Most of them.

3762. Oats, &c., foreign oats?—Yes. Ships with grain come from America and other countries.

3763. But not from Russia?—No, not from Russia, that would be exceptional.

3764. Do you have any foreign milk brought into Ireland?—I do not think so; I never knew of any. No, there is not; we get condensed milk, of course. There were 21,280 cwts. of condensed milk imported in 1910.

3765. To sum up, I suppose that we are the saving clause; we help you to keep out disease more than anything else?—I think so.

3766. (Sir Bowen Bowen-Jones.) With reference to the animals that you import for breeding, are they subjected to any quarantine on your side?—At one time we used to have them put in quarantine. That was

when animals were admitted while foot-and-mouth disease existed in England. That was very many years ago, but now we do not have any quarantine, because if foot-and-mouth disease appears in England we at once stop all the importations; we do not allow any animals in at all, for breeding or for any purpose.

3767. And when the country is free, you admit them under what conditions?—Under conditions, yes.

3768. What are these conditions; we may as well have them in evidence, I think?—A permit or licence in each case. In the first instance, we send the applicant a set of queries which he has to answer and give the particulars of where the animals are, in fact their previous history, the herd to which they belong, the markets at which they have been exposed, and a variety of other questions. If those are answered satisfactorily and there is no disease in the district, such as anthrax or anything else that is liable to be introduced, a permit is issued available usually for ten days, the animal to be accompanied by a veterinary surgeon's certificate of health, and the owner making a declaration that the animals are free from disease, and that they have not been in contact with any diseased or suspected animals within the preceding three months. Then, on arrival in Ireland, they are inspected by one of our veterinary inspectors at the port, and, if everything is right and the documents are in order, they are allowed to be landed. That is the procedure as regards cattle. For sheep it is pretty much the same, except that in the case of sheep coming from Scotland there is a sort of general authority for their importation, provided they have the necessary certificate and declaration.

3769. In the case of cattle, do you require them to be free from tuberculosis amongst other diseases?—No, we cannot do that, it not being yet a scheduled disease.

3770. Have you not power to add that to the number of diseases?—Oh, yes, we have, but we have not done so up to the present.

3771. You have not done so?—No, not definitely. The only Tuberculosis Order that we have in force at present is one that was passed merely for statistical purposes, to try and find out, as far as we can, to what extent and where it prevails most. We merely require cattle owners to report the disease.

3772. Did you follow our English Board of Agriculture in issuing a Tuberculosis Order in 1909, I think it was?—No.

3773. You did not?—We did not. I think in that year there was an Act passed which applies solely to Ireland, and which enables local authorities to slaughter milch cows that have tuberculosis of the udder and to compensate.

3774. And with compensation?—With compensation.

3775. That is pretty much on the lines of the Order of 1909 of our Board?—Well, that Order was never really issued; it was withdrawn, was it not?

3776. It was issued and withdrawn?—Well, this power that I refer to is inserted in an Act, one of the Public Health Statutes.

3777. Is it an Order of your Board?—No; it is an Act of Parliament. It was passed at the instance of the Irish Local Government Board.

3778. Do you know what the exact effect of that is? I do not think the power is very much utilised.

3779. Not much utilised?—No.

3780. But it applies to the tuberculosis of the udder in cattle?—Yes.

3781. We are not inquiring into tuberculosis; incidentally it is rather interesting. In receiving these pedigree cattle from England, do you treat each case on its merits, or is the Order you have referred to just now a general Order?—The Order is a general one; it is worded in this way; there is only one clause in it.

3782. A licence really it is. It would be called a licence instead of an Order, would it not?—"Unless and 'till the Department otherwise order, it shall not be 'lawful to import into or land in Ireland any animal 'or animals from Great Britain from the Isle of Man 'or from the Channel Islands, except with the consent 'of the Department, and subject to such conditions as 'may be prescribed."

3783. That is a general Order?—A general Order. Importations are subject to such conditions as may be

* For further evidence on this point see March 5th.

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prescribed in any such consent, so that each case is dealt with on its own merits.

3784. You impose the conditions in every case. An application is made to you and you impose conditions you consider necessary to protect your country from disease?—Quite so.

3785. With regard to inspection at your ports by your veterinary inspectors, what is that inspection for? If I understood you rightly you said that before exporting, all animals that were sent from Ireland were subject to inspection by a veterinary inspector at your ports; was I correct in that?—Yes.

3786. For what disease do they inspect?—The inspection has been going on for over 30 years. When it was established pleuro-pneumonia in cattle was very rife, and the inspection was then mainly for pleuro-pneumonia, as far as cattle was concerned. It would now be for any disease that might appear.

3787. For anthrax it might be?—It might be for anthrax.

3788. Or foot-and-mouth disease?—Foot-and-mouth disease. We might get it at any time, and might not know of it, perhaps.

3789. What are the powers of these inspectors. Do they prevent the debarkation of stock in vessels if they are not absolutely sound?—They have power to do that.

3790. I suppose Belfast would be one of the ports, would it not?—Belfast is one of the ports.

3791. Belfast to Liverpool that would be the trade? Yes.

3792. Supposing they found an animal defective in any way, would they stop it being exported from your country from Belfast to Liverpool?—Not unless the animal was considered unfit for shipment. The animal must be free from disease, of course, but in addition to that, if it is an animal suffering through various causes, over driving—

3793. That is from the humanitarian point of view?—From the humanitarian point of view. The Inspectors have power to prevent it to be shipped.

3794. But supposing they found a tuberculosis animal, would they stop that from being shipped?—Not at present.

3795. Then their function seems to be with regard to preventing cruelty to animals more than stopping diseased animals being exported?—Cattle are not the only animals. They inspect sheep for sheep scab, for instance, and swine for swine fever.

3796. And tuberculosis in pigs. Would they stop a tuberculosis pig?—If they could regard the animal as not fit to be shipped, they would.

3797. (*Sir Harry Verney, M.P.*) You have described to us the process of disinfection of persons. Do you know what that costs? Have you any idea?—I have not any idea, but it does not cost very much.

3798. Who pays it?—The Department.

3799. You do not know, for instance, how much a year?—No.

3800. Have you any idea; could you give any rough idea?—I could not. I could find it out, and let the Committee know, but I have not the figures at present, but I know it is not much.

3801. Do you know about how many people are disinfected in the year?—In the year 1883, that is going a long way back, there were 21,718 disinfections.

3802. And do you know the cost?—I have not got the cost. In 1884 there were 28,237; in the year 1885, the number fell to 2,012.

3803. And do you know for the last two or three years at all?—I am sorry I have not the figures for the last few years.

3804. You do not know whether it is thousands or hundreds?—The last time it was put into force was last year in a partial way, only from Bristol and Plymouth, there were only 77 people disinfected.

3805. That is a very small number?—Yes.

3806. (*Mr. Lane-Fox, M.P.*) About your direct trade with the Continent, you must have a certain amount of direct trade in feeding-stuffs and that sort of thing with the Continent. It does not all come through England?—No.

3807. Therefore you must have a certain element of danger the same as we have in this country through

the mixing, perhaps, in the holds of ships, or in the railway trucks of hides and feeding stuffs?—There is a possible risk.

3808. Do you import a very small quantity, say of cake or other feeding stuffs direct from the Continent. Can you give any sort of proportion?—No, I cannot.*

3809. However, you do not look on that as a very great risk of infection to you?—Feeding-stuffs?

3810. Yes, the feeding-stuffs and the risk of their mixing in transit with things that may convey infection such as hides?—I do not think there is very great risk in it. The trade is small. Of course many things might introduce the disease, so there is a certain element of risk if there is any trade with a foreign infected country.

3811. You do not regard it in your case as being very serious?—I do not think it is very serious, but, of course, it is a possibility.

3812. We get a certain amount of things coming over packed in hay and straw direct from the Continent?—Yes, quantities of things come packed in foreign straw.

3813. But so far the risk has never occurred to you to be sufficient to take any steps or suggest any steps for dealing with it?—We have not considered it necessary so far.

3814. Do you suppose that in Ireland hay and straw gets to the farm? I suppose it must do; the hay and straw that comes in the form of packing?—I am afraid I cannot give any definite information on the subject, but I should imagine it would sometimes find its way to farms, but I have no information on that point.

3815. (*Major Dunne.*) I notice on page 3 of your précis you say in connection with disinfection, about three parts of the way down, railway companies were also enjoined to devote special care to the disinfection of pens and railway vehicles. Could you tell us at all as to how far railway companies fell in with your suggestions? I suppose there was no question of compulsion used, it was merely suggested to the companies, the possibility, of course, of disinfection?—Oh, yes, there was compulsion.

3816. There was?—The provisions as to the cleansing and disinfection of railway trucks and vessels are the same and always have been for both countries; in fact, all the orders issued under the Diseases of Animals Acts in both countries, speaking generally, I may say are practically identical. The idea was that there should be as much uniformity as possible.

3817. Because as far as we have gathered from evidence which has been adduced before the Committee there are no orders in force as regards the English railways for the disinfection of either trucks, or lorries, or any form of traffic. Can you tell us whether at the time there was any very great objection on the part of the railway companies; did they look upon it as a hardship and a great expense?—No; the provision is: "A railway truck if used for animals on a railway shall on every occasion that an animal is taken out of it, and before any other animal or any horse, ass, or mule, or any fodder or litter, or anything intended to be used for and about animals is placed in it, shall be cleansed and disinfected as follows."

3818. This does not apply in any way for instance to trucks which have been used for hides or calves in their skins, or anything which might carry infection, but simply refers to the cleansing of these vehicles carrying animals?—Oh, yes, that is so.

3818A. I rather gathered from what you stated here that it had a more general application than the immediate application so far as cattle is concerned.

3819. (*Mr. Bathurst, M.P.*) As regards hay and straw, as a matter of fact, except for packing purposes, a very small quantity of hay and straw that is for feeding purposes is imported into Ireland, is it not? You produce most of your own hay and straw, do you not?—Over 5,800 tons of hay and straw were imported in 1910; that would be all from Great Britain; we do not admit any foreign hay and straw for use as fodder or litter.

3820. As regards disinfection, have you any regulations for the disinfection of the holds of ships at your

* For further evidence on this point see March 5th.

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ports?—In the same way as trucks after the vessels are used for animals.

3821. Then that is all?—That is all.

3822. That means lime-washing them?—Yes. The regulations are the same in both countries as regards the cross-Channel trade in animals.

3823. Is this disinfection in your disinfection-boxes by means of sulphur considered effective for all contagious diseases?—That I could not say.

3824. But presumably it is; well, it must be?—I am afraid I am not an expert capable of giving an opinion on that point.

3825. Do you see no particular reason why that mode of disinfection should not be applied to the holds of ships?—Certainly it could be; it would be a bit troublesome I should think.

3826. Well, that is rather the point. It would be a bit troublesome you think?—I think it would be.

3827. It consists merely of burning sulphur?—Burning sulphur, yes.

3828. As a matter of fact, are the fumes of the sulphur retained in this disinfecting-box for any time; how long does the man remain in the box?—About three minutes; from three to four minutes.

3829. And then the fumes are allowed to escape when he comes out?—Yes, and then another man goes in.

3830. What I want to get at is disinfecting clothes; if you put clothes into a disinfecting-box without the man inside them, would you leave them there for three or four minutes?—Yes.

3831. (*Mr. Hinds, M.P.*) I see you say that on 6th March 1884 an Order was made authorising a local authority to slaughter animals affected with foot-and-mouth disease. Would that mean now at the present time if a foot-and-mouth disease outbreak occurred; have they the power at the present time?—Yes, under a General Order made in the year 1900. The Order you refer to was the first Order that was made on the subject.

3832. It is now in force?—Yes.

3833. Another one is, you say, stringent measures of disinfection will be carried out if an outbreak did take place. Will there be anything else more than our Board in England carry out?—I do not think so. I think the procedure adopted by the Board of Agriculture has been marvellously successful. I do not know that it can be improved upon.

3834. (*Mr. Richardson Carr.*) In case there is an outbreak of foot-and-mouth disease in England, of course you do not have any cattle from England?—No.

3835. Do you have any restrictions in regard to anything else, like poultry or anything of that sort, or pigeons, or birds, anything that might come from farms; do you make any restrictions with regard to them?—Anything that might come from farms?

3836. Yes. Supposing there was an outbreak of foot-and-mouth disease in England, would you allow poultry to come in? There might possibly be poultry sent from that particular district. Do you take any steps to prevent that coming in?—No, we have no power to do anything of that kind.

3837. You have no power with regard to birds?—No.

3838. You get a lot of pigeons over for flying purposes?—Pigeons come.

3839. I mean homing-pigeons, carrier-pigeons; they come over and are turned out?—I believe so.

3840. It has been brought up that it might be an advisable thing to have an experimental station, that is to say, to test whether foot-and-mouth disease comes over in hay, or straw, anything of that sort, to feed the cattle, to see with what results. Supposing it could be safely done, do you think you would care for anything being done, anywhere near Ireland for that purpose where foot-and-mouth disease would be, as it were, bred?—I could not answer that question off-hand; I would rather not commit myself to that.

3841. (*Mr. Morrison.*) The only point of difference between your regulations and ours seems to be as regards the disinfection of persons; is that so?—That is the case, and also the prohibition of importations of animals.

3842. These persons were recognised by your own

officials and were known to them, and therefore they could be selected?—Yes.

3843. But do you think it likely, that, say, English farmers wanting to buy cattle in the Irish markets sometimes came across and were not recognised, and may have escaped disinfection?—They might.

3844. You think that would be very likely?—It would be possible.

3845. So that really it was only the well-known people who were disinfected, not those that might come on an occasional visit?—People that came on an occasional visit might escape.

3846. You have no machinery for recognising them; there is no declaration to make or anything of that kind?—No.

3847. You do not know anything about the intercourse between the British markets and the French markets, say, do you; I mean as regards cattle markets?—No.

3848. It is the case that anthrax is also very scarce in Ireland, is it not?—Very scarce; we have not many outbreaks; not more than half-a-dozen or a dozen in a year at the outside. We had 10 outbreaks last year.

3849. Is it reported in a reliable way, do you think?—We have no reason to suppose it is not. We get a great number of reports of supposed cases, which do not turn out to be anthrax, so we can only judge by that.

3850. And I suppose the same causes that operate to make anthrax scarce will operate against foot-and-mouth disease?—I think so.

3851. Do you import much—a smaller quantity of cake and feeding stuffs into Ireland than we do comparatively, in a general way, without going into figures?—Feeding-stuffs, yes, there is a good deal imported; there were 12,000 tons last year.

3852. Of cakes and that?—Feeding-stuffs. And linseed cake, 25,000 tons; cotton-seed cake, 15,000 tons. Yes, there is a good deal of imports of that kind.

3853. You have not got the countries where these feeding-stuffs come from?—The great bulk comes from England.*

3854. Are they manufactured in England?—That I cannot tell.

3855. Then, as regards the disinfection of trucks, have you any system of inspection from the Board of Agriculture in Ireland to see that the regulations regarding the disinfection of trucks are carried out carefully?—Yes; we have a transit staff to look after that matter.

3856. Do you know if they have the same thing in Britain?—Yes.

3857. The same thing?—The inspectors attend the leading fairs, and the railway stations from which the animals are entrained, and they see that the wagons are all properly cleansed and disinfected before the stock are put into them.

3858. At the centres where the cattle markets are held?—Yes.

3859. And we have the same system over on this side?—Yes. Of course our staff is only limited in numbers, and it cannot be everywhere.

3860. (*Mr. Nunneley.*) I understand you have no disinfection of railway trucks, excepting cattle trucks. You do not disinfect other railway trucks at all, do you?—You mean goods trucks; no, only cattle trucks.

3861. Only trucks which are used for live cattle?—Any truck or vehicle that would be used for animals.

3862. Live animals?—Live animals.

3863. (*Chairman.*) There is one other question I meant to ask you. I suppose the veterinary profession now—you having been so free from disease for so many years—do not know much about foot-and-mouth disease? You need not answer unless you like?—I am afraid I cannot answer for the entire profession, but I know that some of our own inspectors are well acquainted with it, because they are still in the service, having seen it in 1883.

3864. The general run of veterinary men in Ireland—you having been free for 26 years—cannot have had the opportunity of studying this disease?—That is obvious.

* For further evidence on this point see March 5th

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[Continued.]

3865. Do you think there is any danger, suppose you did have an outbreak, a serious outbreak in Ireland, from their want of knowledge of this disease?—I should hardly think there is much danger, because, if there was anything unusual, they would be sure to telegraph to the Department. We would send down one of our inspectors who has had experience of the disease.

3866. I suppose you have a veterinary adviser to all your local authorities, have you not?—We have a veterinary adviser to our Department.

3867. No, I mean to your county councils?—The county councils are the local authorities now.

3868. They are appointed by the county council themselves, are they not?—The veterinary inspectors are.

3869. Do you, as a Department, have anything to do with the approval of these men at all, or is it simply left to the local authority?—The local authority appoints, but the appointments are subject to the approval of the Board.

3870. That is what I wanted to get at; they are subject to the approval of the Board of Agriculture at headquarters in Ireland?—Yes.

3871. Suppose a local authority wishes to dismiss its veterinary officer, have they to get the approval of the Board of Agriculture in Ireland for that dismissal, before they dismiss him?—Yes.

3872. They do?—Yes.

3873. And do you find your local authorities in Ireland take exception to that at all; I mean getting your approval and also the approval of appointment, and approval for dismissal; do you find they do not like it; they take umbrage at it?—As a general rule, I may say, they do not object. There have been objections, of course.

3874. But, as a rule, they do not object?—As a rule, no.

3875. (Mr. Bathurst, M.P.) I should like to ask one question. As hides are under suspicion as the source both of anthrax and of this disease, I should like to know from you whether there has been the same steady increase of anthrax in Ireland as there has been in England during the last six years?—In 1903 there were eleven cases, in 1904 and 1905 seven in each year, 1906 eight, 1907 five, 1908 eleven, 1909 nine, 1910 twelve.

3876. Then, taking a period of about 12 years, there is not much difference?—There is not much difference.

3877. Can you tell me whether, in your list to which you referred about feeding-stuffs just now, there is any reference to Bombay cake, cotton cake, or is all cotton cake grouped together, simply as cotton seed cake?—I will show you the list. There are several headings.

3878. (Major Dunne.) In the list of animals that

were attacked in 1883-4, there were other animals, 87; can you tell us what these other animals were? It is on the last page of your précis. The reason why I ask is that a former witness produced an extract from a paper, in which it was stated that some dead hares were found which were infected with the disease. We had heard from previous witnesses that hares were immune, except as carriers. I was wondering whether among these 137 animals, by any chance, there was a hare or some other animal?—No; those animals were deer.

3879. One hundred and thirty-seven; the whole lot?—There were two outbreaks, so far as I can remember at this long distance of time, amongst deer, and there may have been a few goats; but the majority of the 137 were deer.

3880. (Mr. Morrison.) In connection with the appointment of inspectors you mentioned there was sometimes friction. Can you tell me the reasons why the friction arose sometimes?—They did not see eye to eye as to the person who should be appointed.

3881. What were the special points upon which there might be difference of opinion?—As to suitability.

3882. Matters as regards qualification?—As regards qualification, yes.

3883. Not as regards veterinary qualification?—Not of late years.

3884. You mean personal qualities?—Yes.

3885. I wanted to get out whether it was the one or the other?—In some cases it turned on the question of the place where the man lived; he had to be appointed for a certain district; his residence and his private practice being outside that district, not in a convenient and suitable place.

3886. Have you any special qualification that must be held by a local inspector; a veterinary qualification?—The same as here.

3887. So the circumstances of the two countries would be practically the same?—Practically the same, except this: in Ireland there is a provision in an Order under the Diseases of Animals Act 1894 that where it is impossible to procure the services of a veterinary inspector, or that for any sufficient cause it is undesirable to appoint a person so qualified, then a person who does not possess those qualifications may be appointed. In the earlier days there were many such inspectors without the full diploma; but the number has been gradually getting less and less, and there are very few now. There is now a Veterinary College in Ireland through which the diploma of the Royal College of Veterinary Surgeons is obtainable.

(Chairman.) Thank you, Mr. Cantrell. The Committee, I think, will agree with me that yours is a very lucky country.

The Witness withdrew.

Friday, 1st March 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (Chairman), presiding.

Sir CHARLES D. ROSE, Bart., M.P.

Sir HARRY VERNEY, Bart., M.P.

Sir J. BOWEN BOWEN-JONES, Bart.

Mr. CHARLES BATHURST, M.P.

Mr. JOHN HINDS, M.P.

Mr. GEORGE R. LANE-FOX, M.P.

Mr. RICHARDSON CARR.

Major E. MARTEN DUNNE.

Mr. E. E. MORRISON.

Mr. E. M. NUNNELEY.

Mr. W. H. F. LANDON (Secretary).

Mr. O. CAYGILL, Master Stevedore of the United Shipping Company, London, called and examined.

3888. (Chairman.) You have come to help us, if you can, as regards this question of foot-and-mouth disease?—Yes, sir.

3889. I understand you are Master Stevedore of the United Shipping Company of London?—Yes.

3890. And part of your work is the discharging of cargoes, is it not?—Yes, sir.

3891. Where do your line of steamers run?—From London to all Russian ports.

3892-4. And do your steamers bring feeding-stuffs, Russian oats, &c.?—A fair percentage, sir.

3895. Do you bring hides?—Sometimes, sir.

3896. And what kind of feeding-stuffs?—In the way of grain, do you mean, sir?

3897. Yes?—We bring oats, principally oats, sir.

3898. Are those oats mostly in bulk or in bags?—Always in bulk.

3899. Do you put those oats in bulk by themselves,

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[Continued.]

or do you put anything on the top of them?—Sometimes we put hemp and sometimes flax.

3900. Do you put the hides on the top?—No, sir.

3901. Have you a separate place for them?—The mates of each vessel have instructions never to stow hides with the grain. We have 'tween-decks and the upper decks, that is, sometimes a vessel will have three decks, a lower hold, a middle deck, and an upper deck. If we take the grain in the holds, we generally put the grain in the lower hold, put the hatches on, and tarpaulin over. If we take hides we put them in the next decks.

3902. Then, as a matter of fact, hides of any description never come in contact with grain in your ships?—Never in our steamers. That is a standing rule. And another thing is, all grain arriving is supervised by the shipper's representative and the merchants who receive it on this side; and if there is any complaint, these receivers, or these representatives, would immediately lodge a complaint with us, and hold us liable for damage on account of the naphthalene and other stuffs in the hides being shaken from the hides amongst the grain.

3903. When they are discharged on quays, do hides ever come in contact with grain then?—Grain is never put direct on the quay, it is always put in craft.

3904. And, therefore, it never comes in contact with hides at all?—No, sir.

3905. Never?—Never, in our vessels. We have a strict rule with the mates. The mates are instructed never to mix them together, to protect ourselves from claims. These receivers take samples directly the grain arrives, and these are brought to the Corn Exchange. If anything is the matter with it, it would be immediately noticed.

3906. When you take these hides on board you put them, I understand you to say, absolutely separate from everything else?—Yes, sir.

3907. They are never disinfected, are they?—Not aboard the steamer, sir.

3908. Do you know whether they are ever disinfected at all at the port of embarkation?—On the other side?

3909. Yes?—I could not tell you. Naphthalene is used and, I believe, acts as a disinfectant.

3910. But, as far as you know, you do not know if they are disinfected before they are put on board?—No, sir.

3911. Do you know anything about disinfecting the holds of the ships?—No, sir.

3912. Nothing?—They are swept up; that is all.

3913. You do not use any sort of disinfectant?—No, sir; the holds are kept quite dry.

3914. The holds are kept quite dry, and they are swept out after every voyage?—They are swept out after every voyage before we take other cargo in.

3915. Would you see any difficulty in disinfecting the holds of ships?—It all depends on what disinfectant you would use, sir.

3916. (*Mr. Bathurst, M.P.*) Spraying with carbolic; two per cent. carbolic?—It all depends on what the vessel loads on this side; what she takes.

3917. (*Chairman.*) But I mean, supposing you discharge as you do at the Port of London; you then take in a fresh cargo, do you not?—Yes, sir.

3918. Would there be any difficulty in disinfecting those holds before you put in a new cargo?—I think not, sir; we should always arrange a cargo of cotton, or something which would not take hurt.

3919. Would it be much of an expense to the ship-owners?—Not a great deal.

3920. Would it cause delay?—It might cause a little delay, sir.

3921. What you have told us as regards hides being kept absolutely separate from grain on your ships; of course, you are only speaking for your own line. Is that the general custom, do you think; perhaps you do not know?—I believe the shippers at these ports are instructed to that effect.

3922. To keep these things absolutely separate?—I believe so.

3923. And food-stuffs never, I understand you to say, come in contact with those hides?—No, sir. The

grain is always well covered by bulk covers; we might put hemp on top of it.

3924. (*Sir Bowen Bowen-Jones.*) Do you import any skins, sheep-skins, as well as hides?—Which sort of skins, sir?

3925. Sheep-skins?—Salted skins?

3926. I want to know any sort of skins, dry and wet?—Yes, we import dry and wet; very few wet.

3927. Are they disinfected at all on the other side before being shipped?—That I could not say, sir.

3928. You say the naphthalene itself is a disinfectant?—I believe so; it smells very strong.

3929. Is the naphthalene put on the skins to preserve them?—I presume it is; sometimes we have a bale break, and if the bale is in half you see all this white stuff spread be tween each skin.

3930. It is a sort of preservative?—I take it it is a preservative and a disinfectant.

3931. Is naphthalene invariably used on all skins?—I have never seen anything else on these bales of skins only this naphthalene.

3932. The grain, I think you said, is put in the bottom of the three holds?—Yes; the bottom always.

3933. The skins on the top of the three holds; is that so?—Yes, sir.

3934. Is it not possible for the germs of disease to drop from the skins as they are being unloaded into the holds below?—These lower holds will have the hatches on and a tarpaulin, and battened down.

3935. And the skins would be removed from the vessel before taking that tarpaulin off?—Yes, sir, in all cases.

3936. When the skins are put on the wharf are they mixed with any other merchandise?—Ninety-nine times out of a hundred they go in craft direct to the Boston or New York steamer.

3937. They go direct into the barges?—Yes.

3938. You unload into barges always?—Into craft, yes.

3939. Are those barges used for the grain?—No, different lightermen do the grain work; different lightermen do the skin work.

3940. Would any of the merchandise from your ships be put on the barges when the skins are transported from the ship?—Never, sir.

3941. According to your view, there is no possible contact between the skins themselves and any other part of the merchandise?—Well, it may be up against some hemp, or flax, or cut wood, or anything else, but it never comes in contact with the grain.

3942. Not with the grain?—We have strict instructions to keep that separate.

3943. These, of course, I think you said to the Chairman, were the general instructions given by all shipping companies?—Yes, sir, I think so. We have instructed our representatives at all shipping ports in the Baltic to keep these separate, and the mates of the steamers also have instructions likewise.

3944. (*Chairman.*) How many years have these strict instructions been in effect; is it the last few years, do you know?—Ever since I have been there I have known it.

3945. (*Mr. Bathurst, M.P.*) Is there anything else ever carried in those grain holds besides grain?—In the same hold?

3946. Yes, in the same hold?—We sometimes fill up with another cargo.

3947. What would be the nature of the other cargo?—Cut wood, veneer wood, hemp, flax, anything that will not hurt.

3948. But when you say hemp and flax, do you mean manufactured hemp and flax?—No, unmanufactured, the bales coming over for manufacture.

3949. The bales; how is that packed; the hemp and flax; how would that be packed as a rule?—A large bundle of hemp made into dolls and all laden and bound with tyres not covered, but the flax has always got a matted cover.

3950. A matted cover?—Yes.

3951. Are those covers used over and over again?—No, sir, they go away and we never see them again, they are always new.

3952. Are cattle cakes carried in the same hold?—

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[Continued.]

We very seldom get them; no, I do not think I have known them to be carried.

3953. Do you carry any cattle cakes from Russia?—Yes. Sometimes, sir; some parts of the year.

3954. And that would be carried in the same hold as the grain, would it?—We very seldom do, but we have in one or two cases.

3955. Is that carried in bulk?—Sometimes in bulk, sometimes in bags.

3956. Would it ever be carried in the same place as the hides and the skins?—No, sir.

3957. Never?—No, sir.

3958. Do you ever carry hay or straw from Russian ports?—We only carry a little hay when we bring ponies. That is always left on the ship to be destroyed. That is for use on the voyage, sir.

3959. For the purpose of stock being carried?—If they ship, say, 50 ponies they ship so many bundles of hay for fodder for the ponies during the voyage. If it is not all consumed, it is left on the vessel and destroyed.

3960. Where are the ponies housed on the ship; anywhere near these holds?—No; on the deck, sir.

3961. Do you carry any eggs?—Yes, sir, but not on the pony steamers.

3962. No, but do you carry eggs on the same steamers as you carry grain and hides?—In some few cases, sir.

3963. There is a very large importation of eggs from Russia?—Yes, we have special holds for eggs; refrigerated holds.

3964. In which the eggs are carried?—Eggs and butter are carried in those holds.

3965. And nothing else is put into the same holds?—No, sir, we would not put anything else in case anything went wrong with the refrigerator and the wet would damage it.

3966. But the eggs would come in contact with the butter?—Well, there would be the eggs in one hold and the butter in another.

3967. How is the butter packed?—In barrels, sir.

3968. Then hemp or flax, I think you said, is stowed in the grain hold, is it not?—Yes, sir.

3969. Is it ever used for any other purposes?—Than what, sir?

3970. Than throwing over the contents of the grain hold?—No, sir. If we wanted another place to fill up, we fill up with that sort of stuff as well.

3971. When you say hemp and flax, do you mean mats made of hemp or flax?—No, the bales, sir.

3972. Then, you do not cover the grain in bulk with anything at all?—Yes, sir; separation bulk covers, which we call separation covers.

3973. What are they made of?—Well, a kind of jute preparation, like gunny bag, only on a large scale.

3974. That is made of what?—Jute.

3975. Is that used over and over again for the same purpose?—Just before we start the grain, these covers are gathered up and put away, and if they are wanted, they are brought out again for the next voyage.

3976. Are they washed?—No, sir, they are all dry; if you wetted them they would not be any use.

3977. I did not quite gather how your eggs are carried?—In cases and half-cases.

3978. I was not quite sure, from your reply to Sir Bowen Bowen-Jones; are these hides that you spoke of always treated with naphthalene?—I have never seen anything else.

3979. You have never seen any other disinfectant, but are they never carried without a disinfectant?—They have always naphthalene, sir, always.

3980. And did I understand you to say that all the hides sent from Russian ports by ships, other than yours are similarly stowed?—I could not answer that, sir, but I believe the shippers instruct the other side to keep these separate.

3981. They have instructions on the other side?—I believe so. I know they have with our ships, sir.

3982. Where did those instructions come from? They are not instructions of your people, I suppose, are they? Are they instructions of the Government Officials in Russia?—I believe from each shipper, sir.

3983. From each shipper?—From each shipping line.

3984. You cannot tell us that these instructions are universal instructions, given by every shipping company?—No, sir; I can only answer for our own steamers.

3985. Can you tell me whether these barges, into which the grain is put, are used for any other purpose besides the grain?—These lighters only lighter grain, as a rule.

3986. They are only used for grain?—That is all, sir. Sometimes, if part of the grain is sold, it is delivered in sacks; if it is not sold, it goes loose and it is landed in the granaries, so there is no contamination with skins, or anything else, during the transport.

3987. Is it put on the barges in bulk or in bags?—When it is for landing at quays; when it is landed and put into the granary, it is landed in bulk; in the majority of cases for buyers, when it is going up country, it is delivered into sacks, and put on the rail.

3988. You sometimes carry wet skins, you say?—Yes, sir.

3989. Is there nothing done to the holds, where wet skins have been carried, except brushing them out afterwards?—Brushing them out, and as much time as possible allowed for the hold to dry; hatches left off, so that the hold can dry.

3990. If the moisture from the wet skins happens to contain germs of disease, there is nothing to prevent that drying into the sides and floor of the hold? I mean you never wash out the hold or disinfect the hold, other than brushing it?—That is all, sir.

3991. Have you any idea yourself of a possible means of transferring the germ of disease from one article to another that you carry on your ships?—No, sir; I have never known of a case.

3992. But you cannot even conceive the possibility of such a transference taking place?—No, sir.

3993. (*Major Dunne.*) Just one or two questions; how are these hides packed; are they in crates?—In bales, sir.

3994. Have they any labels attached to them, any kind of a certificate to say that they come from animals that have not been in any way subject to disease?—No, sir; no labels at all.

3995. No labels at all?—The mark is simply printed on the outside hides.

3996. There is nothing to show that the hides may not be hides from diseased animals?—No, sir.

3997. Or from animals which have been in contact with other animals that might have the disease?—No label at all, sir.

3998. Are these hides subject to inspection at all?—Inspection by whom, sir?

3999. Inspection by any Government officials on our side?—I have never seen any Government official there, sir.

4000. When they are once landed here, they go away to the factories, or whatever their destination is, without any further interference on anybody's part?—Yes, sir.

4001. You mentioned that you brought ponies over; what is the destination of these ponies?—They go to the market for sale here, sir.

4002. Are they inspected at all?—Yes, sir, they have to have a certificate.

4003. A certificate of what?—Of health.

4004. But no certificate as to where they come from, or whether they, on their part, have not been in contact?—They bring a certificate from the other side to certify they are in good health.

4005. Would it be possible for these ponies to have been in contact with a diseased animal?—I think not, sir.

4006. But they are dispersed about the country when they arrive; they go out into the ordinary markets, and are dispersed all over the country?—Yes, sir.

4007. Do they come over in any great quantity?—Fifty is about our extent, sir.

4008. Do you know what they are used for? What sized ponies are they? Are they coal-mine ponies, pit-ponies?—I should think they are a little larger than the pit-ponies, sir.

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[Continued.]

4009. (*Mr. Nunneley.*) You do not bring very many of these ponies now, do you?—No, sir, about 50 is our limit.

4010. You mean 50 on a ship?—Fifty on a ship.

4011. But are there many different cargoes come now in the course of the year?—Of ponies?

4012. Yes.—Well, there might be 50 a week for some weeks, and then we may not get any for some weeks again.

4013. There is no large importation of them now; I know a few years ago they came rather freely?—It all depends on the demand.

4014. You do not know what becomes of them afterwards?—No; only they are taken to the market for sale.

4015. With regard to these holds, what are they generally used for; after the hides have come out, what would be the next thing put in them?—Something that would not hurt, sir; that would not get wet or anything like that, if the hold happened to be dry. Do you mean the wet hides or the dry?

4016. The wet, principally.—We would put some bales of cotton or bales of jute; something that would not hurt.

4017. Are your ships used at all for the coasting trade in England, or do they go back to Russia?—They go back to Russia.

4018. At once?—In many cases in ballast.

4019. So far as you know, the same part of the ship is never used for feeding-stuffs of any kind, either grain or cake, as is used for hides or skins?—Never, sir.

4020. (*Mr. Richardson Carr.*) I did not quite understand the question Mr. Nunneley was just asking. We will say the ship has three decks, the lower one for hides, the middle one for grain, and the top one for something else?—The lower one for grain, the grain would always be at the bottom.

4021. And the middle one for hides?—It might reach the middle hold, and then the hides would be kept on the top.

4022. When you have unloaded that, is that never used for grain when the ship comes with a fresh cargo? Do you ever alter the position of the cargoes on the ship? is it sometimes grain in one space?—We generally keep the same hold for grain.

4023. But it might possibly be used for hides, I take it; where the grain has been?—I should not think so. We generally keep the holds for grain.

4024. There is no chance of the grain ever being put where the hides were on another journey coming?—No, sir.

4025. How long do the ships stay with you before they go back; before you send them away again?—Sometimes they are here one day and go back the next; sometimes they stop here a week.

4026. If there was any cleansing or disinfecting of the holds, that would have to be done on the other side?—It might be done on the voyage, if the ship goes back in ballast. The ship sometimes has to get back on the Thursday to keep her turn. Then she is sent away in water ballast.

4027. She does not go away loaded?—Sometimes loaded, sometimes light. If the ship remains here, you would have time to disinfect on this side.

4028. It would not be a very great trouble to disinfect these holds with a spraying machine?—I do not think so.

4029. Nor a very great expense?—I do not think so, sir.

4030. You put the grain and then the tarpaulin?—It is not a tarpaulin, it is a separation cover.

4031. And then the hides on the top?—No, not the hides on the top.

4032. Where are the hides?—I beg pardon, I thought you meant in contact with the grain.

4033. No, I meant the grain first?—The grain first, then put the hatches on, then a tarpaulin.

4034. And then the hides?—And then the hides on top on the other deck.

4035. The hides on top. That tarpaulin is never disinfected, of course?—No, sir.

4036. And it does come in contact with the hides?—The tarpaulin itself, yes.

4037. You are absolutely certain that it would never come in contact with the grain?—We could not say for certain.

4038. But there are no steps taken to disinfect it, or deal with it in any way?—Not with the tarpaulin like that.

4039. And the reason you keep all these things separate, I take it, is not in the least from the question of disinfection for cases of disease, but merely that the cargoes should not be damaged from coming in contact with one another?—For our own protection.

4040. The question of disease never comes into it at all?—We would take a thought in it.

4041. But principally for your own protection?—Principally for our own protection. As I said before, the receiver would immediately claim from us if he found anything wrong from this naphthalene, and we would have the whole of the cargo thrown on our hands.

4042. You have never heard what this naphthalene is brought in for?—Merely as a disinfectant.

4043. Disinfectant from what?—From disease.

4044. You do not think it is put in to preserve the hides, to keep them from being damaged? The dry hides, for instance, moths might get in, or insects?—I should not think so; this would prevent moth.

4045. You do not think it is put in for that purpose?—It may be; it may have some meaning for that.

4046. Put in to keep it; preserve it?—To preserve the hides and act as a disinfectant too, sir.

4047. (*Mr. Morrison.*) These ponies come straight from the farm to the ship?—I could not say, but I believe they bring them from up-country on the other side.

4048. Have you any idea how long it would take from the time they leave the farm to the time they are landed on this side?—I could not tell you, sir.

4049. How long does the voyage take?—About four to four and a half days, sometimes five days.

4050. So that one of these ponies might possibly be on a Russian farm where there was foot-and-mouth disease and in the same week be on an English farm?—He would have to pass the surgeon on the other side before he would be certified as sound.

4051. Yes, but that would not prevent him carrying disease germs on his skin or on his hair?—I could not tell you that, sir.

4052. There is no inspection or check of any kind upon this happening?—I could not say, sir.

4053. There is no certificate, I mean, for instance, coming with that pony?—There is a certificate coming with the pony certifying him to be in good health.

4054. In good health, yes, but it does not certify that it came from a place where there was no disease?—I could not tell you that, sir; I do not think so.

4055. Then this certificate is shown to whom?—The man who takes the ponies here.

4056. That is to say, to the buyer of the pony?—To the receiver of the pony; he takes the certificate with him.

4057. And the shipper has nothing to do with the pony at all, except to bring it across the sea, I suppose?—The shippers have.

4058. I mean to say the ship-owner?—That is all, sir.

4059. Then as regards the oats and the barges, and the hides and the barges, they both go into barges, I understand; both the oats and the hides go into barges?—Different barges.

4060. Different barges, of course. Where are the hides put after they are taken from the barge?—In the majority of cases they go to the America steamers and are transhipped to America.

4061. They do not touch our wharf, as a rule?—We may take a few hare skins, or something like that may go to some of the wharves, Red Lion Wharf or something like that.

4062. Do many of these skins get put on to the wharf?—Very few, sir.

4063. But some do?—Some; the majority are for transhipment.

4064. A few from each ship?—A few from each ship, but they would not be horsehides or cowhides, or anything like that; they would be hareskins or something like that.

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[Continued.]

4065. Smaller skins?—Yes, smaller skins.

4066. So that the hides of cattle do not get put on to the wharf?—Very seldom.

4067. All the rest of the hides are simply transhipped and sent to America?—From our ships into the American steamers; yes, sir.

4068. Now, as regards the hold. You say that after hides are taken out, the hold is simply swept?—Yes, sir.

4069. That will raise a good deal of dust, will it not?—There is not much dust; just a little.

4070. But the hatches might be open, so that there might be communication with the hold below during the sweeping?—No, sir.

4071. The sweeping is done when the hatches are closed?—It is done before the hatches are uncovered.

4072. Is the sweeping and the cleansing all done before you take out the grain?—Yes, sir.

4073. But I suppose it is quite conceivable there is communication between the three holds, so that it would be possible for dust to penetrate from the upper hold, to fall down to the lower hold?—Not until the hatches were removed.

4074. But the hatches will remain open a considerable time when you touch at a port?—Yes, sir, to let air get in to ventilate the hold.

4075. You want to dry the hold?—To ventilate it.

4076. And you let as much air in as you can?—Yes.

4077. And at that time you will do the cleaning mostly when the hold is empty?—No, sir. We generally clean up before we start the grain. The grain is in the bottom of the hold; we generally clear up before we start that.

4078. You clear up the two upper holds?—Yes, if both the two top holds have got done, we do the top while we do the second.

4079. You sweep out the two upper holds before you take off the hatches of the lowest hold?—Yes.

4080. How is the grain taken up from the lowest hold?—In sacks.

4081. Are they carried by men?—Well, it is weighed on deck; it is carried by men if it is to remain in sacks, or if loose it is shot down a shoot into the barge.

4082. What other feeding stuffs do you carry besides those you have mentioned? Do you carry linseed at all?—Sometimes linseed.

4083. Considerable quantities of linseed?—Not a lot.

4084. Is that carried in the same hold as grain?—Yes.

4085. Under the same conditions?—Under the same conditions.

4086. And so with any other feeding stuff of that kind?—Yes.

4087. Your eggs are carried in cases, are they; are they all packed in straw?—Packed in straw and shavings.

4088. What is done with the cases when you come to a port; are they put in trucks?—They are taken to Hay's Wharf, put in cold storage and taken away from there as wanted.

4089. They are put in cold storage almost invariably?—Yes.

4090. Have you any idea how long they may remain there?—No.

4091. They are put into carts in order to take them to the cold storage?—They are taken away in carts.

4092. You have not a copy of the instructions that are sent to the other side, have you, when goods are being shipped?—No, sir.

4093. Are they the same for every firm of ship-owners?—I can only speak for ourselves.

4094. Yes, you do not know?—No, sir.

4095. But they are probably the same, as far as you have seen?—I should think so.

4096. Would it be difficult to get a copy of these instructions?—You will have to write, I suppose, to one of the ports.

4097. (Chairman.) You say all these skins come in in bales?—Yes, sir.

4098. Do you know about the quantity of skins that come in in a bale?—I could not tell you the number, but I should think about four cwt. a bale.

4099. I was not quite sure that you were quite confident in the answers you gave to Mr. Richardson Carr about hides and the grain. Are you perfectly sure that hides are never put in the holds where grain has been?—Yes, sir.

4100. You are sure of that?—Yes.

4101. What number of steamers have you got plying between London and St. Petersburg?—To that one port only three.

4102. But between London and the Russian ports, roughly?—Ten to a dozen, I should think.

4103. (Mr. Bathurst, M.P.) What happens when you have an exceptionally large importation of grain from Russia, as I think you have had during the last two years. Where do you store it if there is no room in the grain hold?—We have special steamers for this large Russian grain trade; it generally comes when St. Petersburg is open, sir, and that grain is coming by three steamers which run to St. Petersburg only.

4104. But supposing you have a larger cargo upon your usual steamers than the grain hold can contain, where would you put it, on the deck?—Put the grain on deck?

4105. Yes?—Never!

4106. You never put it anywhere except in the grain hold, even if you had an excess cargo?—If we had an excess cargo we should leave it till next week; we could shut some out.

4107. What happens to the sweepings of the dust and other material that you sweep up in the hold?—It is put on deck, sir, and either burned under the boilers, or thrown overboard when the ship is at sea.

4108. Put on deck?—Yes.

4109. How long does it remain on deck?—Until the vessel goes.

4110. Until the vessel goes?—Goes away.

4111. And in the meantime it remains accumulated on deck?—Yes, sir, or sometimes it is put on a landing and destroyed. In the majority of cases it is put on deck, sir.

4112. Whereabouts on deck is it put?—If the ship has a well-deck it is put there.

4113. How long would it remain there?—A couple of days, maybe; it may be three.

4114. If a high wind is blowing, or if the lower decks are draughty, what is to prevent that dust being carried to other parts of the ship?—The combings of the hold which may be in some places two or even three feet high.

4115. That would be sufficient, in your opinion, to prevent its being carried about?—Yes.

4116. When you say that these sweepings are left on deck, would that be in the same part of the ship as the ponies have been standing?—Yes, sir.

4117. The same part?—Yes, the ponies would be on the same deck, the ponies on the forepart, and the sweepings on the afterpart.

4118. As regards these ponies, are there any regulations with regard to the grooming of them before they are landed?—I believe not, sir. A man comes down and receives them; there is nothing done in the way of grooming.

4119. There is no necessity, for instance, for the washing and cleaning of their hoofs?—I do not know about necessity; it is never done.

4120. On the face of it, there would be nothing to prevent them standing we will say in dung, or other dirt, and carrying that on shore on their feet?—They generally run them along when landed; the majority of this comes off.

4121. On the wharf?—On the quay, sir. The quay is swept up, and the dung is taken away again.

4122. One word with regard to naphthalene. This naphthalene, I think, I understand from you, is placed between the skins or hides?—Yes.

4123. You have no reason to believe that it is rubbed into the skins?—No, sir, simply sprinkled on.

4124. And that, as I think Mr. Richardson Carr indicated, is used as it is commonly used in this country, to prevent the moth removing the hair on the hide?—As a preservative, sir, and a disinfectant.

(Chairman.) Thank you, Mr. Caygill.

The Witness withdrew.

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Mr. J. SHARE-JONES, M.Sc., F.R.C.V.S.

[Continued.]

Mr. J. SHARE-JONES, M.Sc., F.R.C.V.S., Secretary of the Veterinary Board, University of Liverpool, called in and examined.

4125. (*Chairman.*) You are the Secretary of the Veterinary Board of the University of Liverpool, are you not?—Yes, sir.

4126. And you have kindly come to give us evidence to-day upon this question of a more effective method of the eradication and prevention of infectious diseases in the domesticated animals, and especially those communicable to the human subject with an important bearing upon our national health. In your précis you propose to divide that into two heads, firstly by the establishment of administrative centres throughout the country with head-quarters easily accessible from all parts of the area controlled by each. The first point of that is, you tell us, of a more thorough knowledge of local conditions and requirements and an intimate acquaintance with particular types of farms, farm-buildings, breeds of stock, etc. Would you tell us a little about that, now?—My remarks, in addition to what I have inserted in my précis, so far as that particular point is concerned, will be very brief. That is the contention that such administrative centres distributed throughout the country would provide a more effective means of eradicating disease owing to the fact that a knowledge of local conditions would be brought to bear more directly on the administration. For instance, we will take two counties with which I am particularly well acquainted, Denbighshire and Cheshire; in Denbighshire the farms are of a different type altogether from the farms in Cheshire which is a neighbouring county, and the farm buildings are of a different type. The farms are poor in this hilly county, the farm buildings are extremely poor in Denbighshire, the farmers themselves are generally described as being good, that is so far as the treatment of the land itself is concerned, but when the question of hygiene comes up or the principles of preventive medicine, they show an absolute ignorance and a lack of any desire to know anything about them. Their sole object seems to be in the treatment of the land and one generally hears, in moving about the country, that they are good farmers so far as the treatment of the land is concerned, but careless and untidy. Now, that would not apply to Cheshire. There are certain grave difficulties which arise when administering any provisions with the object of controlling animal disease. Take, for instance, in Denbighshire in these small farms where the animals are so badly housed, it is rather common practice to find animals of even two or three different species under one roof. You will find horses housed in stalls adjacent to those in which cattle are housed, and so on, and that establishes a grave difficulty so far as such matters as isolation of the animals are concerned. Those are conditions, of course, which are found in Denbighshire and which are very different in such a county as Cheshire. So that an intimate knowledge of the local conditions in a county of that kind is essential in any campaign which professes to eradicate disease. Then there is a knowledge of the different breeds of animals and the characteristics of the breeds required when putting preventive measures into operation. For instance, a man whose knowledge was confined, say, to Shropshire sheep or some of the larger quiet breeds of sheep, would employ methods which could be applied to these breeds, but which would be absolutely of no use applied, to say the Welsh sheep; the conditions of life and environment of the breeds in counties such as Denbighshire, are totally different from those which obtain in, say, Cheshire.

4127. Now, may I take it from you that, on that point, you think the farmers in the district which you have been alluding to are men who do not seem to take an interest in diseases of animals, that they do not know anything about it?—I do, sir. They display an apathy towards the question. I shall come to it in a more detailed form when we deal with one or two of the other points in the evidence, I think.

4128. A more efficient means of controlling the inspection of meat and dairy cattle, lack of general system with powerful controlling centres?—That opens out a very broad question, sir, which, from my conver-

sation with you, scarcely comes within the purview of this Committee, but what is matter for standing reproach to this country is the lack of any general system in connection with the question of the inspection of meat. And the same might be applied also to the inspection of dairy cattle. It is my personal view, a view which I might say I hold very strongly, that any system which is not generally applied throughout a country, avails very little in the operation of the eradication and prevention of disease. I will illustrate it from the question of the inspection of meat. In some towns in this country there is what might be called a fair inspection carried out with some semblance of seriousness and in other towns there is practically no inspection. Now, I would submit, sir, that a system which admits of a condition like that cannot possibly contribute much towards the eradication of disease either in the human subject or in the lower animals. At the same time, and under these conditions the public themselves move freely from one town to another. You get a system in (A); you get practically no system in (B); the people in (A) are protected by a system of inspection of meat, but the people in (B) are not protected, and the people in (B) move freely into (A), and infect the people there, so that regarding the general problem, without a generalised system, there can be no adequate and proper protection.

4129. It is more a Local Government Board question; it is a question of health more, is it not?—Yes, sir, but I would be prepared to contend that a great deal of the work which at present is carried out by the Local Government Board should be transferred to the Board of Agriculture. But then I presume that is not what you have to deal with here.

4130. That is altogether outside the scope of our inquiry?—For one moment, sir. Shall we compare that lack of system with, say, a system on the Continent—if it is out of order, then we will go on to the next question.

4131. You are going to talk about disease on the Continent?—The inspection of meat on the Continent.

4132. Well, I think that is a little outside our reference?—I agree, sir.

4133. Perhaps you will go to the third point?—To keep in closer touch with the agricultural industry, and to exercise a more detailed and constant supervision. A point which always impresses me when considering the relationship of the practitioner of veterinary medicine to his clients and his patients, and comparing that relationship to that which exists between the practitioner of human medicine and his patients and their relatives, is that in the one case, that is in the human practice, there is a sympathy between all parties concerned which appears to be directed to one object, and that is to the eradication of the disease. Now, in the practice of veterinary medicine amongst the lower animals that sympathy appears to me to be altogether wanting. The matter is treated in too restricted a manner; to the case under consideration, rather than in the broad sense, the elimination of disease from the lower animals and ultimately from man himself, so far as that disease is communicable from the lower animals to man. The ultimate aim in both cases should be the same whether they are treating the disease in the human subject or the lower animals, but the sympathy which contributes so much to success in the one case in human practice seems to me to be absolutely lacking in veterinary practice. Now I would suggest, sir, that a local administrative centre such as the one which I have suggested under (A) would do much, or at least could do much, to foster a sympathy of that kind. The movements, the frequent movements of the officials within the area would give them such an intimate acquaintance with the practitioners and with the farmers in the area, an acquaintance with their particular farms, with their particular stocks, and so on, that the sympathy to which I have referred would be a matter of gradual growth and would be fostered. Then there is at present in these areas of the country, I must say and I regret to say it, a dread on the part of the public, and particularly the owners of stock, of inspectors, a dread of inspectors

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of any type, and the general opinion appears to prevail that the visit of an inspector is a matter really for reproach to the person whose place is visited. Now, I am not suggesting for one moment, sir, that that is due to any lack of courtesy or any lack of a proper administration of duties by the inspectors. Not for one second would I suggest that, but I certainly think it is due to the central government which prevails, and if there was decentralisation, such as is suggested in the main heading of my précis, I think that there would be a greater degree of familiarity springing up between the inspectors who would be moving continually in that one area, and the people whose stock they had in their charge and the welfare of which they had control over, that that feeling of dread of inspectors would disappear and that they would be welcomed. Now, I would compare that, sir, if I may, with the visits of inspectors to elementary schools. We find that an inspector of a district of elementary schools acquires, through working in the one area, a knowledge of all the peculiarities of each different district, and he gets to know also what I may call the idiosyncrasies of the various districts, and there gradually develops between him and the teachers and the children a feeling of friendship rather than of dread.

4134. Before you go on any further, do I understand you really to say that there is a feeling amongst the farmers whom you have come across against the inspectors of the central authority, and that they would prefer to have administrative bodies in different counties to carry on this work of disease? Do I understand you to say that?—I offer no opinion as to what they would prefer, sir, but I give it as my opinion that there is a distinct feeling of dread on the part of the persons in whose charge stock is placed, of the visit of inspectors of any type.

4135. They wish to be left alone altogether; I take it they do not care to have an inspector on their farms. Do you mean if diseases break out? Do you mean that?—Yes, sir.

4136. That is quite a new view; I have never heard it. Surely if disease breaks out they would wish to have some competent authority to give them advice on it, especially as they know very little about disease?—Well, my point is that they dread the visit, and that is the term I used. Take, for instance, a disease which the farmer could not possibly help, and any man who had a knowledge of the disease would be always prepared to concede that it was nothing the farmer could help at all, the visit of an inspector and the condemnation of that man's stock leads to a feeling amongst the neighbours that there is some slight cast upon that farmer himself.

4137. Well, I hope that view which you have expressed is not general, and I do not think it is general amongst farmers; at least I should be very much surprised to hear it was. But anyhow, will you go on with your next point?—Then, the fourth point, in support of (A) sir, that is the establishment of administrative centres, is that we could have a more rational definition of infected areas and that within those areas the administrative measures could be carried out to a greater ultimate effect. A knowledge of local conditions which could be acquired by such an institution of administrative areas would be particularly useful in deciding the closure of markets. That is a matter now which amongst the agriculturists throughout the country—well, some parts of the country with which I am acquainted, I do not wish to be pulled up again—is of rather serious complaint. I would respectfully suggest that the distance from the centre of infection is not always a safe basis to go upon in deciding the closure of any particular market. In some places, through custom alone, the people of a particular district have a habit of patronising a certain market, irrespective of the distance of that market. That would be one point against distance alone being a basis. Then, another reason would be that people frequently have a tendency to patronise a particular market for a particular animal without it necessarily following that that is a better market for the purchase of the animal. It is a habit on the part of the people. Take, for instance, a place which I know called Cefn, which is distant nine miles from Oswestry,

seven miles from Wrexham, four miles from Llangollen. Now, the people in that district go to Oswestry for cattle and sheep, although it is nine miles away and there are cattle at Wrexham and at Llangollen. They go to Wrexham for horses, and they go to Llangollen chiefly for pigs. The same would apply to a village over the mountain in the neighbouring valley, a place named Glyn, which is more distant still from Oswestry. They have a habit of patronising the Oswestry market, so that an administrative body, such as one might institute say, in North Wales, would better control the closure of those markets if the officials had an intimate knowledge of the habits of the people within the area.

4138. Your point is that the central authority has not the same knowledge of a district as the local people; they may make areas which are unsuitable for the carrying out of these things; that is your point, I think?—Yes, quite so. When I refer to local people, I am not referring to any of the existing councils. I was referring to a new, a kind of subsidiary Board to the Board of Agriculture.

4139. You have not had outbreaks of foot-and-mouth disease in the district for some time?—No.

4140. And, therefore, these people who object to these regulations or these areas have really no knowledge of what the Board of Agriculture would do as regards foot-and-mouth disease, if they have not had it there?—Oh, no, they have no knowledge at all.

4141. That is their view, that if it did take place the authorities in London would not be able to know as much as the people down there?—As the proposed new bodies, yes.

4142. And do you suggest then, take, for instance, the counties you have mentioned, Denbighshire or Cheshire, that there should be a local Administrative Council under the Board of Agriculture Department?—Yes, sir, I would not go to the other extreme; I would not carry decentralisation so far as to hand over these matters, say, to existing councils, such as county councils or district councils. I shall come to that point later on in my evidence, but I would go so far in the way of decentralisation—we will take Wales—as to constitute a Board, so that Wales should have an administrative centre in North Wales and another administrative centre in the south.

4143. Are you bearing in mind something that they have just given to Scotland?—Well, it is not altogether disconnected, sir.

4144. It looks to me very like that?—It is not altogether disconnected, sir.

4145. But anyhow, under that new Board they are not going to have the administration of the Diseases of Animals Act, but you want it for Wales?—That is what I am here prepared to discuss, sir.

4146. Well, we will go on?—Then, the fourth point is that from each of these administrative centres educational campaigns on the principles of hygiene and preventive medicine should be carried on. It is within the knowledge of you, sir, and most of the gentlemen present, the campaign which we are carrying on in Wales now, a voluntary campaign with the object of eradicating tuberculosis. It has been my privilege, I might say, to lecture practically throughout Wales recently in that campaign.

4147. On tuberculosis?—On tuberculosis, in so far as it affects all the species. The object of the campaign, of course, is eradication; to get rid of it. Well, what has struck me very forcibly has been, first, the almost total ignorance of the people of any relationship existing between tuberculosis in the lower animals and tuberculosis in the human subject, and, secondly, the extreme readiness with which they have given a listening ear to it, and with which they have appreciated it, and I certainly think that we can illustrate very forcibly the importance of disease in the lower animals, so far as it affects the human subject, from, say, tropical medicine. The study of one type, man himself, is a thing of the past to-day, and we can only get our big results by studying all the species from the protozoa to man himself. The first of the blood parasites which have formed the basis for tropical medicine was discovered in the rat; the first one that was associated with disease was discovered in the blood of the horse,

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and that has formed one of the pillars upon which the whole of tropical medicine has been built up, so that we cannot afford to-day to ignore information from any species, however insignificant, and I certainly think that this carries us back to one or two of the points upon which you took me up a moment or two ago, namely, that an educational campaign thoroughly prosecuted among the farmers and the owners of stock, would bring about a different relationship, a different feeling between them and the administrative authorities, and show the public that the object of these administrative authorities was not to persecute or prosecute, but the object was to assist and help to the best of their ability.

4148. And for the common good?—And for the common good, yes; whether it be dealing with disease in the lower animals or disease in the human subject.

4149. Well, now, what about the encouragement of inter-communication of veterinary surgeons to bring about a close co-operation between them, the agriculturists and the administrative authorities; what have you to say about that?—That illustrates a principle which, in an amateur manner, is in practice now in Liverpool. We have what we call the Liverpool University Veterinary Medical Society. It is not the usual type of veterinary society, but is a society of which one of the main objects is to provide assistance in diagnosis. The membership is open to veterinary and medical men, and I speak as the president of that society. We have a membership of 50, and members are drawn from Lancashire, Yorkshire, Cheshire, and North Wales. Each of the members pays a subscription of a guinea a year, and, in return for that, he is entitled to send in to a laboratory at Liverpool, which is partially subsidised out of these subscriptions paid voluntarily by the members, specimens for diagnosis. A member is entitled to bring specimens there and consult the laboratory assistant, and, moreover, all interesting material, all interesting points, in regard to cases which are sent there, are collected and grouped, and they are submitted to quarterly meetings of members, at which these points are discussed, and problems relating to disease in the lower animals are considered, and, very frequently, I must say commonly, some general understanding concerning a knotty problem in disease is arrived at before the members disperse. I think a movement of that kind, which is purely voluntary, could, with benefit to the stockowners of this country, and ultimately, which is far greater, to the human race of this country, be nationalised, and put upon some regulated basis. I shall refer again to the nature of the material which they deal with.

4150. Do I understand that in this society there are veterinary surgeons and other doctors besides; is it a joint thing?—Medical men and veterinary men are eligible for membership.

4151. In that society of yours, how many members do you say there are?—50.

4152. Do any of the young veterinary surgeons come and join?—Yes, they do.

4153. The young men?—Yes, and I must say the older men too.

4154. Yes, but I mean young men just getting on in the profession, and men who have not seen anything of disease much, and who are trying to learn what they can?—No, not necessarily; it is surprising how the older men take part. Problems are presented of disease every day; disease is not so stereotyped that problems are not presented to the oldest and most experienced of men every day in their lives.

4155. Is that all you have got to say on (A)?—Just now, yes, sir.

4156. Now, on (B)?—By the erection of a Pathological and Bacteriological Laboratory or subsidising an existing Laboratory especially equipped for the purposes of dealing with animal diseases in each administrative area, together with a small Experimental Farm station. I may point out here now, of course, that this does not specifically apply to foot-and-mouth disease, particularly the last portion.

4157. Before you get on with this, I want to know quite what you mean by an administrative area; I do not quite understand your point; do you wish this set up in each county; under our County Councils? At

this moment we have got our Diseases of Animals Committee of the County Council, and they work very well. Do you wish to set up another body; do I understand that that is your view?—It is, sir.

4158. To set up another body altogether?—Another body, yes.

4159. In addition to our present body which is already in every county, you wish to set up another one?—Instead of that, so far as diseases of animals are concerned.

4160. Instead of the body which is established by the county council?—Yes.

4161. But why would not the present Executive Committee do exactly what you are asking for a new body to do?—There are several big disadvantages, so far as existing local authorities are concerned, in my judgment. One is that they are too restricted in dealing with disease; another is the great difficulty which is frequently experienced in getting public bodies of that type to co-operate. I know that the law prescribes that they may co-operate, but there is frequently a great difficulty in getting them to avail themselves of that.

4162. Do you mean co-operate with the next county?—With the neighbouring body, yes.

4163. The neighbouring authority?—Yes; and another disadvantage is that they are slow in operation. To get that co-operation would entail the passing of a resolution by each council. That would be so, would it not, sir? Each county would discuss previously whether it would co-operate or whether it would not with the neighbouring county; and then there is another disadvantage, and that is that frequently undue publicity is given to discussions, which publicity is sometimes detrimental to the achievement of what is ultimately desired, namely, the eradication of the disease.

4164. Then, I may take it, as I mentioned before, that your view is that an Administrative Committee should be appointed for each centre, that is, each county?—Not each county, sir.

4165. Well, each centre; I thought you said each county just now?—No, sir; each centre.

4166. And that the existing authorities should still go on also; I mean the Contagious Diseases Committee of a county under the county council should also go on?—No; that work should be transferred to this body.

4167. Transferred outside the county council altogether?—Yes.

4168. Should these administrative centres be, I suppose you would agree to them being, in close touch with the Central Authority?—Certainly.

4169. And you think that that would be more conducive to eradicating disease and making the people in the district have more knowledge of disease, take more interest than under the present system?—That is exactly my contention.

4170. And notwithstanding that the action of the Central Authority during the last few years has been most successful, and doing good work?—I do not deny that it is successful to a degree; but you will concede to me that disease is very prevalent.

4171. We have only got to do with foot-and-mouth disease?—You are only concerned with foot-and-mouth disease yourselves, yes.

4172. Now I understand; will you go on with your next point?—In regard to (B) the establishment of a Pathological and Bacteriological Laboratory, or specifically subsidising the existing laboratory. Another point in favour of the establishment of such a laboratory, sir, is to provide an adviser to facilitate rapidity of diagnoses, and quicker receipt and dispatch of specimens and thus quicken administration. That, I take it, would be conceded as being axiomatic, that the quicker disease specimens can arrive at the centre where they are to be dealt with the better for all concerned. It is a common complaint, even in our laboratory in Liverpool, that frequently valuable disease material arrives there in such a state of decomposition that it is impossible to offer any opinion upon it at all. The provision of an adviser and consultative centre for all the practitioners within the area is another advantage.

4173. Veterinary practitioners I suppose you mean. Veterinary practitioners, yes. At present, of course, with a centre in London reports are generally written,

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The head administrator practically never sees the general practitioners about the different parts of the country and there is one great advantage in a practitioner being occasionally able to take his material to the administrative head, as he would be able if we had an administrative centre controlling an area which was a comparatively short railway journey from every part of the area. I would emphasise the great importance of a personal interview in many cases between the person who had a complete and thorough knowledge of the history of the case and the circumstances attending the outbreak, and the person who is ultimately responsible for the formation of a diagnosis, a personal interview which would allow one to cross-question the other. Then, thirdly, the establishment of a laboratory of that kind in each area to provide facilities for research work either by the permanent officials or by practitioners under their supervision. Now, I would refer in this connection, sir, to the great wastage of valuable disease material which there is in this country through the lack of institutions, such as these which I mention, and through the want of encouragement to the people to send their disease specimens to centres. With regard to the centre which we have in Liverpool, material is sent in which would provide useful information concerning quite a number of different diseases. A large proportion of the specimens consists of tumours from different species. I can conceive of material of that kind collected from different parts of the country, systematically collected, and encouragement being given to people to send them to the centres, being of immense value, for instance, in such a problem as the cancer problem, that is tumours from various species. I have a list here of specimens which were discussed at the last meeting of the Society to which I refer. They include Fibro-Adenoma (Mammæ), Lipoma in the Mesentery, Septic Arthritis and Ostitis in a dog, Tuberculosis, Sarcoma Psammoma, Carcinoma (Mammæ), Fibro-Lipoma of Œsophagus (Cow), Epithelioma of Stomach (Horse), Epithelioma, Osteoma, Carcinoma, Melanoma of Lip, Tuberculosis of the Liver, Tumour of the Brain, and so on; and those specimens are all discussed at the meeting and some general opinion upon them arrived at before the meeting terminates. That is the rule. That is purely a voluntary affair, and to me it appears that a principle of that kind generally applied, as I have already stated, would prove rather a valuable National asset. That is covered in the facilities for research work.

4174. You really feel that there is a good deal more research wanted in those animal diseases than we have had up to the present time?—I have not the slightest hesitation in saying that as a great Nation—I know I am in a place where language must be fairly moderate—we are a disgrace.

4175. We are a long way behind foreign countries?—Quite a long way behind the most insignificant of Continental countries.

4176. Now will you go on to (D) to present facilities for the collection of statistics and other information regarding disease?—Yes. Statistics which should be collected at a laboratory of the kind. These cases are not dealt with indiscriminately. There is an order. With each specimen a report is sent unless the practitioner can bring it. If he cannot bring it he sends a written report. A copy of that report is taken and a complete microscopic examination, if necessary, made of the specimen and a written report is sent back to the practitioner. Those reports are kept and properly filed and time after time we have a very interesting publication which produces by no means unuseful results to practitioners in the elucidation of problems which frequently occur in their individual practices. Then, in regard to publications, I would advert to the attitude of the public generally to local and central publications. I think there would be a tendency on the part of the public to pay a great deal more attention, and devote a good deal more interest to a publication which came from a centre where the officials were intimately known to the people in the area, than there is devoted to publications which come from a centre such as London. There is a kind of gap between the readers and the writers, which I think would be

bridged over by having a more local administration. Then the last part applies to tuberculin.

4177. That is not within our Reference?—You consider that out of order.

4178. Yes, I do. But I think I may take it the whole of your evidence, most interesting evidence I grant, rather shows to me that your view is that the Central Authority in London is not conducive to education in the different districts. You wish to see more of these administrative bodies in the different centres to carry out the work in these different centres irrespective, I might almost say, of the Central Authority in London. That is what I gather rather than you want to do, do you not; you want to give them full powers?—I would give them full power to administer in so far as certain diseases are concerned.

4179. Take, for instance, this disease we are talking of, would you like to give it to the administrative centre to carry out the Foot-and-Mouth Disease Order?—Not foot-and-mouth disease; that is one.

4180. Then, the whole of your case rather breaks down, because we are talking about foot-and-mouth disease here, you see?—Not necessarily, sir, I would grant to these local bodies power to administer, power of administration of principles which would be laid down at the centre. London should dictate the principles, but the administration of the principles should be in the hands of local bodies, such as the one that we have been referring to, and I would claim that would be conducive to a more thorough administration.

4181. I see your point. Then you think an authority like you propose to put up would do better work than the Contagious Diseases Committee of our County Council in each county?—Certainly. I would not suggest for a second that we went to the other extreme and decentralise altogether; but as an illustration of the area to be covered by one, I would simply suggest that in regard to Wales, for instance, if the proposal for the establishment of a new Board of Agriculture for Wales went through, then Wales might be split into two administrative areas, with a centre for North Wales and a centre for South, based upon a day's return railway journey to the centre from the most distant part of the area; and, if the experiment were successful, then one might be instituted for the North of England, say with a laboratory at Newcastle.

Really you are putting it in very nice language. But you really mean Home Rule for Wales, do you not?

4182. (Sir Bowen Bowen-Jones.) Professor, you understand that our Reference is entirely, or almost entirely, in connection with foot-and-mouth disease?—Yes.

4183. And we are to try to discover a means of preventing its introduction into this country, more especially than its eradication?—Yes.

4184. Now, your evidence has been principally on other points, not on foot-and-mouth disease. You advocate smaller administrative centres. Would you recommend North and South Wales as administrative centres for the extinction of foot-and-mouth disease if an outbreak occurred?—Foot-and-mouth disease under the central authority, the ultimate authority in the case of foot-and-mouth disease should be certainly in London.

4185. But you would recommend North Wales as being an area to administer?—For administration, yes.

4186. For what reason?—As I have endeavoured to show throughout my evidence for a greater degree of thoroughness in administration.

4187. Are you aware that the administration of the Board of Agriculture admits of restriction being applied as soon as an outbreak is announced?—Yes, sir; but by whom, may I ask, is the outbreak to be announced?

4188. By the veterinary surgeon of the district or by the owner of the stock?—So the onus is thrown upon an owner. Now, how could that possibly work in the case of the majority of farmers in a country like Wales where they have never seen foot-and-mouth disease, and where many have never read of it; they have no knowledge of the symptoms, a sore mouth and a lame leg would convey nothing to a large majority of them. I say the officials should be intimately acquainted with the areas.

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4189. Would you recommend the abandonment of notification, then?—No, sir.

4190. Well, how would you get at the knowledge of the existence or suspicion of disease?—Well, so far as I can see, you can only get at it, I agree, by notification, but a thorough knowledge of the district, a thorough knowledge of the people on the part of the official, will bring about an infinitely more effective notification. The education of the people on the part of the administration, as I have endeavoured to contend, will also contribute towards a more efficient notification.

4191. Then is it your experience that the farmers in North Wales do not call in their veterinary surgeon when they have something the matter on their farms?—That is a very common practice in many parts.

4192. Not to call in the veterinary surgeon?—A very common practice in many parts for them not to call in a veterinary surgeon, unless something happens which entails the death of a number of animals.

4193. You say that the Welsh farmers do not know much about disease when they get an ailment on their farms. Do you mean to say they do not think of calling in advice?—I will not make it as a general statement, but I say it is common for them not to.

4194. Why should they call in their neighbouring veterinary surgeon, their next nearest veterinary surgeon, any more under local administration than under an administration as it at present exists?—Well, I have endeavoured to show that an educative campaign is very necessary.

4195. That is the educational part of it. I am speaking of the administrative part now; we will leave the educational part out?—I did not separate them. An educational campaign carried out from a centre of administration would be conducive to early notification, to a more real notification than we have at present.

4196. Do you rather come to the conclusion that at the present time the Welsh farmers conceal any disease that breaks out on their farms?—I do not wish to adopt such a wholesale condemnation of Welsh farmers as that.

4197. I am speaking on your evidence; I do not say so; is that your view?—I do not say that Welsh farmers are all so much worse than small farmers in some other parts, but I will say this, that they are not educated up to that standard, so far as disease is concerned, as would contribute towards a useful form of notification on their farms.

4198. You said that they had a dread of inspectors coming?—Yes, they have.

4199. Why should they have a dread of inspectors coming more now than under the system advocated by you?—At present it is only an occasional visit of an inspector. You will notice in my evidence that I suggest the free and frequent movement of inspectors within the area.

4200. Because they have a new inspector they would like him better than the old inspector. Is that your view?—No, there would be a familiarity with the inspector. I rather contend the converse would be the case to what you say.

4201. Are you aware now that as soon as notification is declared, if there is any suspicion, that the movement of stock is restricted in foot-and-mouth disease on the farm?—Oh, yes.

4202. Can you suggest any better method of dealing with disease than that?—May I point out, I do not wish to appear here under false pretences in any shape or form: evidently Sir Bowen Bowen-Jones is not acquainted with the reply which I gave to the invitation, my reply to the invitation to come here was, that I was prepared to come here to give evidence on the prevention of animal diseases generally.

4203. What you have told us is most interesting?—That is the condition under which I came, so that I must ask, sir, for the evidence to be taken in general terms, as I hope I have given it.

4204. Why so? I know the working of the Board of Agriculture. I have discovered since I have been here that their action is so prompt and so effective that I want to be convinced by very strong evidence before I can change my mind that any better system can be

adopted, and that is why I am asking you these questions?—Yes.

4205. You are aware that the farm at once is made an infected place?—Well, of course, your remarks are confined to foot-and-mouth disease.

4206. To foot-and-mouth disease, with which we are dealing on this Committee?—Yes, quite so.

4207. You are aware that on the arrival of the Board of Agriculture inspector, which is within a few hours, they define an area round that. Now, you rather object to that area because a large area is imposed by an inspector of the Board of Agriculture. You know, of course, the very contagious character of foot-and-mouth disease?—Yes.

4208. Would you recommend only a small area being applied to that disease?—Certainly not.

4209. You said the Local Authority, such as you propose, would be better qualified to decide the areas. Why should the Local Authority be better qualified. Was your reason because perhaps they now stop a market within a few miles to the inconvenience of the farmers? Is it better to inconvenience the farmers by stopping that market until the disease is eradicated, or to spread the disease all through the country?—I think it would be conceded by every reasonable man that it is better to eradicate the disease than to pay attention to the inconvenience of the farmers.

4210. Then, in what respect is local knowledge required in order to create a proper area; in what respect is local knowledge required in order to create what you say is an area that could be better done by a Local Authority than by the Board of Agriculture?—I think I gave one illustration of how it might be more useful when I described the cases of partiality of particular individuals in a particular locality for particular markets.

4211. Where you described what?—The partiality of the people of a particular district for a particular market.

4212. Yes, well that is the very reason why I think it would be dangerous because a man wants to buy a horse at Wrexham or a cow at Oswestry, the Local Authority can decide that Oswestry and Wrexham markets should be left open regardless of the spread of disease?—How is your Central Authority up in London going to obtain information as to the people of Cefn, say, having a partiality for Llangollen for pigs?

4213. Excuse me, Professor my point is that that partiality ought not to be indulged?—Oh, I quite agree; I quite agree with that.

4214. That is my point?—But you do not deny that it exists?

4215. Well, to a very limited extent; but the evidence in answer to your question for your information before this Committee is that it is accepted in the majority of cases with a little grumbling and acted up to most loyally. I think I am right in saying that?—I see.

4216. Well, then, with regard to research, you would recommend these different local bodies to be set up for research instead of having a Central Research Station. Do you think that wise, as a professor, on one particular branch of diseases? We are dealing with the diseases of animals generally; do you think it wise to have work divided and given to men who are in active practice, like veterinary surgeons; can they attend to real research work?—I do not think anything should be done to discourage efforts at research work on the part of any individual, whether he be practitioner or member of a University or College staff, or any other individual concerned in the work of diseases.

4217. But as a professor in the University of Liverpool, do you think it possible that real research work can be carried out by gentlemen who are engaged in active business avocations?—I certainly do; as I have stated in my evidence, under the direction of the expert whom you would have in charge of the laboratory.

4218. I always thought research work required undivided and constant attention over a series of years to be of any value. I may be mistaken; I am a layman, you are a professor?—I am not suggesting that in regard to foot-and-mouth disease specifically. I wish you to distinctly understand that.

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4219. All animal diseases?—All animal diseases, yes. In regard to the question of research work being carried out at different centres, such as, say, one in North Wales, one in South Wales, one in London, I would offer this contention that it is rather against the securing of a beneficial ultimate result that all the workers should be working on the same lines. I think it would be conducive, in many cases, towards the securing of a beneficial result that workers should attack a problem from different points of view, and that is what you would get if you had workers even on the same problem working in three or four different centres.

4220. Would you not be duplicating the work instead of concentrating the efforts of the staff on one particular line of investigation?—As soon as the solution has been arrived at there would be no necessity for further work; a solution with confirmation.

4221. A solution is never arrived at in research work; absolute solutions?—I am sorry to say, sir, that in many cases I must agree with you, but take, for instance, when Koch was endeavouring to discover the cause of tuberculosis, when he had discovered the bacillus and established that as the cause, that was the solution as to the cause.

4222. And he said it was not afterwards, you know. Just one more point. You have told us a good deal about tuberculosis. The public wanted more protection from bad meat and milk, and that sort of thing. The inference was quite right, no doubt they do; but surely that can be better done through the legislation of the country by the Parliament for the United Kingdom, say, till Ireland is separated from us, instead of by local bodies, such as you speak of. Would not a good Public Health Bill, a Milk and Meat Bill, prevent tuberculous animals being allowed to exist?—I quite agree, sir.

4223. And to protect the public from having bad milk or meat?—Yes; but the administration of the provisions of that Bill by and from a powerful controlling centre, fairly local, I think you will agree with me, would contribute more towards it.

4224. The law of the land surely should run through the land, and through the district; it ought to run in Scotland and Wales, surely?—It would run through the land. I think, if the principles could be instituted at Westminster, the principles could be put into practice by these local bodies, and, I contend, more effectively, by a body which would embrace four or five counties, than by a body which would simply embrace one county.

4225. You would substitute for the county councils and the boards of guardians the setting up a local administrative authority for North and South Wales?—Yes, as a step towards what one might call the ideal which you have possibly suggested as a separate Board of Health for the country as a whole.

4226. One or more. Take Wales, for example; do you think that other diseases besides foot-and-mouth disease would be more drastically dealt with under such a body as you have proposed than they would be under the present system?—Oh, yes, I do, sir. It particularly refers to those diseases that spread slowly—the bulk of disease.

4227. Do you think you could cure scab quicker under that new system that you have proposed than under the existing administration?—I think it would be better in relation to scab and to tuberculosis.

Still Welsh farmers had not done much towards exterminating scab till the orders of the Board of Agriculture came in. Thank you.

4228. (*Mr. Bathurst, M.P.*) I have a few questions to ask you, but it is only fair to tell you I regard your views and your possible campaign with great apprehension. Do I understand that your general idea is that decentralisation both as regards administration and as regards inquiry and research should take place in connection with diseases of animals?—Yes.

4229. You have excepted from this rule the particular disease which we are inquiring about. Now, may I ask you what particular diseases you have in your mind? May I give you some illustrations: would you apply your system to pleuro-pneumonia, to cattle-plague?—No, sir.

4230. Nor to anthrax?—Diseases could be rather

easily grouped. That would be a matter for subsequent consideration. Some diseases might be called imperial, they are few; you might call foot-and-mouth disease and pleuro-pneumonia imperial. Anthrax you would call local; that could be dealt with.

4231. You think that the control of anthrax could be left entirely in the hands of such local bodies?—It could be left in the hands of such a Board, yes.

4232. Without any direction from the Central Authority?—Well, I will not go so far as to say that in regard to anthrax. Might I put it this way: The relationship of this Central Authority to these Divisional Boards, if you like to call them so, would be just that of the Central Parliament to the Parliament of Ireland; the Central Authority would have the power of ultimate revision, or ultimate control.

4233. You are evidently a strong Federal Home Ruler?—Yes, sir.

4234. Let us follow up one particular disease; let us take anthrax. It is suggested, and with some reason, that one prolific source of anthrax in this country is the importation of hides and skins and fleeces, which have not been disinfected?—Yes.

4235. Would you leave the control of such matters in the hands of your new Central Local Authority?—All the imports, matters of that kind naturally separate themselves from these slowly proceeding, slowly infectious diseases, such as tuberculosis; matters of that kind could be readily left in the hands of the Central Authority.

4236. I will get in about tuberculosis in a minute, but in regard to anthrax what would be the duties of your new Local Authority with regard to Anthrax?—I may say, Mr. Chairman, and I think it will be conceded from the précis which I have sent, that I am not present to enter into details of this nature. I am not prepared to depart from broad principles.

4237. Well, I will not press you; but you realise that what we have to consider is how best to control and prevent the spread of these more serious diseases, such as I have mentioned?—Yes.

4238. However, I will not press you upon anthrax, but let us turn to another to which you give prominence in your précis—tuberculosis. I understand you have been carrying on a little campaign with regard to tuberculosis?—I might correct you; it is the National Memorial to King Edward.

4239. But there have been lectures given in your district with regard to the source of human tuberculosis?—It is our National Memorial to our late King Edward that a campaign against tuberculosis be carried out. That campaign embraces the education of the people so far as tuberculosis in animals and the people themselves is concerned, and in that educational campaign I have been invited to lecture on many occasions.

4240. That is what I thought; that is just what I wanted to know. Well now, in the course of your lectures first of all are you going to put forward the ideas which at the time of his death were held by Koch or are you going to put forward the ideas which have been incorporated in the Final Report of the Royal Commission?—I agree with the Final Report of the Royal Commission on Tuberculosis.

(*Chairman.*) I think we are going a little beyond the Reference to this Committee.

4241. (*Mr. Bathurst, M.P.*) I really want to illustrate the possible effect, if I may say so, of this particular administration or type of administration and research; I will not follow it more than one minute, sir, but may I just ask you this because I think it is rather important; are you, in the course of these lectures to which you refer, prepared to tell your hearers that the main source of human tuberculosis is bovine-tuberculosis?—The main source, certainly not. We are on a campaign against the disease in general—a campaign of eradication. What we try to emphasise, and I personally think we must emphasise, is the importance of attacking infection by that disease from every possible source, whether that source be the greatest of the sources or one of the least important of the sources. If it is a source of infection, then our policy is to attack it from every possible point of view.

4242. Assuming that one of the chief sources of

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human tuberculosis is insanitary housing, is that a matter that you are only going to attack from a local point of view, or is it not desirable that such a matter should be attacked from a central point of view?—Insanitary housing is a different question from meat and milk. You cannot move houses, houses are not mobile, they are not movable; milk is totally different.

4243. Let me take milk. You have got in your mind milk. I suppose you are aware that the people who are complaining of the condition of milk are the people who live in London, and other large populous centres. Are you going to give them no voice in the control of the production of milk?—Of the production of milk; certainly they have a voice.

4244. I do not quite see where your local authority is coming in as regards milk as a source of tuberculosis?—If you have a Central Authority and say four or five Local Boards, Divisional Boards, I do not think that you have quite grasped the fact, if I may put it that way, that I do not go to the extreme in the way of localisation, a Divisional Board covering several counties.

4245. I am only wondering what duties there will be left for your local control stations with your local administrative bodies in connection with animal diseases?—Local diseases which constitute the great bulk of disease. The entire administration of the tuberculin test, which I think you will agree is an enormous branch of work, and the inspection of dairy cattle and cowsheds.

4246. You would leave the inspection of dairy cattle not to the consumers of the diseased milk, but to those in the district who really produce it?—Within that area; if it were four or five counties; I would leave it within that area.

4247. Now, you have given it as an evidence and I am very glad you have, of the value of this localised research work, the manufacture, sale and distribution of tuberculin for the tuberculin test. Are you aware that even tuberculin manufactured by the best experts in England to-day is not accepted by foreign buyers as a sufficient test for tuberculosis, that in fact we have to go to the Pasteur Institute in Paris in order to get a tuberculin which will satisfy the buyers of our pedigree stock?—I am not aware of that, sir, and I would not be prepared to subscribe to that opinion.

4248. Well, I happen to know it because I am an exporter of pedigree stock and I have used both, and I am sorry to say I have discovered that English tuberculin is almost useless for the purpose for which it is manufactured, and other cattle-owners have found the same?—Do you contend that English tuberculin is absolutely useless, sir?

4249. I do not say it is useless, but it is not dependable?—That is your contention.

4250. It is not accepted as a certain test; it is not accepted as a certainly reliable test. Now, assuming that is so, and I think you may take it from me that it is?—I do not grant that it is; I do not concede that point.

4251. I am prepared to tell you that amongst the exporters of pedigree stock from this country, among those who deal with the Argentine Republic and other foreign buyers, it is not accepted as a satisfactory test. Assuming that that is so, do you think anything is to be gained by allowing the manufacture and the distribution of tuberculin by a local authority?—By one of these local authorities, such as I suggest, sir, certainly. They would be Imperial enough to be a safeguard to the area they would control, a large enough area; each would be part only of a body, to ensure that such a degree of an Imperialistic view would be taken of the matter that there would be a standardisation of those products.

4252. How are you going to equip these local research stations with efficient experts?—That would be in the details of the scheme.

4253. And where are you going to find them?—The experts?

4254. Yes?—They will not be wanting in this country if their services are really required.

4255. I know you are not prepared to speak to foot-and-mouth disease; I wish you were in this connection,

but let me take the others that I mentioned, cattle-plague and pleuro-pneumonia; where are you going to find experts in this country to-day that are prepared to man your various local research stations throughout the country?—Well, it means this, that with some diseases our men have not had experience, so that we should be provided with some opportunity to send men into those countries where such diseases were prevalent. If we have the brains, which I have every belief we have, in this country, then we should not be wanting in public spirit to place those brains in such an environment that they could be put to the proper use in their own sphere.

4256. Do you really think that as efficient and valuable work would be done by local scientific inquirers as is being done and will be done to a greater extent in the future by fully equipped men at the very top of their profession receiving adequate remuneration at a central institution?—I certainly think there would be room for at least four or five centres of this type, and that at each of those four or five centres there could be placed an efficient person, an efficient gentleman, as supervisor of the research work to be carried on there, and I think that the sum total of the contributions to our knowledge would be very much greater by institutions of that type, a number of them, than it is at present.

4257. You do not think that in this connection a little knowledge is a dangerous thing; might prove to be a dangerous thing?—I do not quite see the application of your statement there, the application of the proverb.

(*Sir Harry Verney, M.P.*) As a Welshman, I agree with a good deal that Mr. Share-Jones says; but I have nothing to ask him.

4258. (*Mr. Nunneley.*) I think you said you do not speak specially with regard to foot-and-mouth disease, but we are here to inquire particularly as to that. Can you tell us how these local bodies that you propose to set up would find out tuberculosis and foot-and-mouth disease more quickly than is done at present?—Well, I think even granting that the same methods of notification as were brought forward by Sir Bowen Bowen-Jones were in operation, what I contend is that a system such as the one I suggest would accelerate and intensify those methods.

4259. Our chief difficulty of course, it seems to me at least, is to get the people to know and to recognise foot-and-mouth disease?—That is it.

4260. Well, how would you do that; by lectures?—An educational campaign.

4261. And could not that educational campaign, if necessary, be carried out by each county council, by each one in his own county, better than by one from six or eight counties?—Not necessarily, it would be carried out from that centre where there would be a laboratory. If what I am suggesting here were carried out in each county it would mean a laboratory in each county.

4262. I am not speaking of laboratory work?—The laboratory would be at the educational centre, and from that administrative centre the educational work would be carried out.

4263. The farmer would not come there to learn; the knowledge must be taken to the farmer?—I quite agree, from that centre.

4264. I should have thought a lecturer employed by the county council for one county would have been as well as one from seven or eight counties?—Where is the county council going to get the lecturer?

4265. With regard to these centres, do you think that the disease, if an outbreak did occur, would be dealt with more quickly, or even anything like as quickly as it is from London?—More quickly.

4266. I come from Northamptonshire. Take any county you like, join us on to that and make your station in the county town of any other county you like, there is not a single one with which you could communicate and from which we could get assistance anything like so quickly as we could get from London?—That would be an important point which would come out in the distribution of your centres. If it can be worked more expeditiously from London then in accordance

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with the principle which underlies what I suggest, your centre would be in London.

4267. Then it is so almost all over the country?—There are parts of Wales that you could not get to and from London in two days.

4268. In Northumberland and all the Midland parts of the country?—In many parts, I agree.

4269. It seems you concede London would be the centre for, I should think, three-fourths of the country?—For those parts of the country to which London was the most accessible.

4270. (*Major Dunne.*) You attach, I think, considerable importance to what you have described as local knowledge?—Yes, sir.

4271. As regards dealing with an outbreak. When you talk about local knowledge, under the present regulations there is a 15-mile zone drawn round the centre of the outbreak, and we have heard a certain amount of evidence to show that among a certain number of people, they rather, to use a colloquialism, kick at the extent of the zone?—Yes.

4272. I suppose what you meant in answer to Sir Bowen Bowen-Jones is, that where the local authority lays down a hard-and-fast minimum of 15 miles, if the regulations, or the carrying out of the regulations, lay with a more decentralised body, they, with their local knowledge, say, that there was a very large range of mountains, or a river, or some other local condition, would be quite justified in restricting that zone, and the neighbourhood which was infected would have the advantage of the local people administering the Act, who would take into consideration the question of a range of hills or the question of a wide river. And, in your opinion, you think that would be an advantage over having the regulations laid down by a Central Authority in London which is not aware of the configuration of the land. That I take to be your view?—That is my view.

4273. You did not mean in answer to Sir Bowen Bowen-Jones that you were an advocate for the selfish interests of one particular section wishing to restrict that area?—Oh, certainly not.

4274. That is what I gathered from your reply to Sir Bowen Bowen-Jones. I think you were at cross purposes in the matter?—Really in the administration of the principles which were laid down centrally.

4275. You do attach importance to the local knowledge which your decentralised local body would have of the configuration of the land, which I have described?—Yes, I do.

4276. You attach considerable importance, I take it, to the knowledge that would be distributed among owners by people trained at these different centres?—Yes, quite so.

4277. And you maintain, of course, that it would be easier to get a well-qualified lecturer and a person well acquainted with this particular disease which we are inquiring into, viz., foot-and-mouth disease, in a few centres like you suggest, North and South Wales and Northumberland and London, than you would by having lecturers sent out by each county council?—Yes.

4278. You would get four or five better men than you would from the 50, or whatever the number of counties there are in England; that is your view, is it not?—Yes, sir.

4279. (*Mr. Morrison.*) I am not going to follow you into the administrative changes which you recommend, because I do not think they are very likely to have very serious consideration; but I fancy that the motive at the back of your evidence is really more the necessity for increased educational facilities?—Yes, largely.

4280. You think the farmers, in the first place, are extremely ignorant of many things in connection with disease, and also, as far as I can gather, the veterinary profession in the country. You would like educational facilities for them in the way of societies, and so on, and even you think the Central Authority might with advantage have facilities for the purpose of increasing their knowledge. That is at the bottom of your evidence, really?—Well, to a certain extent, yes.

4281. I should like to know, because I could not make out from your evidence whether your agricultural colleges in Wales are not lecturing to the farmers in

various thing. Do they not send out extension lecturers?—They do.

4282. Do not these lecturers cover the ground, so far as country districts are concerned?—In my opinion, no, sir.

4283. I only want the information, because I may say I do not think there is a village centre where we do not have lectures of all kinds on veterinary science and agricultural science?—May I ask by whom, sir?

4284. They are sent from the East of Scotland Agricultural College, and, of course, that is by arrangement with the county council; but I may say the opinion in our country districts is that we have too many of these lecturers rather than too few?—Well, in replying to you, I may say lecturers are sent out to lecture on diseases from certain agricultural colleges. You would never think of sending an unqualified person out to lecture to the human subject on human disease, and yet they seem to have no compunction whatsoever about sending out men who are unqualified to lecture on animal diseases to the farmers and to the general public and pay them out of public funds.

4285. Then, your complaint is rather against the colleges for sending out unqualified men?—I did not come here with the intention of making any such complaint; I am only answering the question which you put to me, sir.

4286. But you think that that is the weak point in the educational arrangement?—That is decidedly a weak point in the present system of subsidy by county councils to agricultural schools.

4287. Supposing that, instead of this not properly qualified lecturer, you had a choice of properly qualified men; would not that meet the needs of the case in your view?—But is not that going to multiply the expense; would there not be duplication again? There would be fewer centres in what I am suggesting than there would be under yours. To hand it over to county councils means a greater difficulty of devolution, if I may call it, than I am suggesting.

4288. Each agricultural college in Scotland serves several counties and every man employed is fully employed; there is no waste in the administration?—No.

4289. I am only suggesting that would be a line of less resistance than the one you are advocating?—I came quite prepared to have a considerable amount of resistance.

4290. The next point was as regards veterinary surgeons, and I must say I am very much with you, as far as I understand your scheme. Your idea is that in an area, I suppose a considerably large area, the veterinary surgeons ought to join into a society really for discussion purposes and also for research purposes?—Yes, there should be some organised effort made; I mean something in connection with the Government, which would encourage that.

4291. What size of area would you suggest for such a society?—Well, I have given an illustration in Wales; one for North Wales and one for South.

4292. In order that the society might flourish and have proper facilities, you would require to have the use of some laboratory?—Yes.

4293. But that laboratory might as well be in London as within five miles of the centre of that area?—Oh, no.

4294. Why not?—I should say plant a laboratory in the area.

4295. But, why in the area?—I have given it in evidence.

4296. Yes, but let us have it again, just in your own words now. I think it is the distance you object to. What does that mean, you want a specimen examined? What delay have you if you have to send up to London from Edinburgh, which is a long way. All you have is eight hours' delay only compared with having it done in Edinburgh?—Yes, but do you not lose the influence of the environment of the laboratory on the district. It becomes purely a mechanical thing sending a specimen to London and sending it back. If we had the laboratory and an educational centre within the area then the influence from that centre would permeate that area, the educational influence.

4297. Let us have it a little more detailed; you

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mean that the veterinary surgeons in a district would go to that laboratory personally?—Yes.

4298. What would they do there?—I have suggested that they should go there for periodical meetings to discuss the specimens that were sent there.

4299. But if they are only going to meet, any hall would do as well as a laboratory to meet for discussions as in a place where there was a laboratory?—Oh! no, sir, that is one of the fundamental differences which exist between the Society which I have described, and the ordinary society. This is a Society, and one of the principal functions is diagnostic.

4300. But, what do they do in the laboratory when they meet; do they discuss reports or do they actually make investigations?—I am suggesting that they should make some investigations under the direction of the head of the laboratory.

4301. But would you think that the proper function of a veterinary surgeon is to go into a laboratory and enter upon some difficult scientific investigation as an ordinary thing?—It would surprise you, sir; it would also surprise Sir Bowen Bowen-Jones, if you knew how many medical men interested in their work make use, and great use of a laboratory such as the University of Liverpool provide at Liverpool; they are in and out in connection with some little investigation all the time. Nothing but good can come of such a practice as that.

4302. I have some experience in connection with that in Dundee, where there is a good laboratory and where there is a society formed by doctors for the purpose of getting investigations and tests and so on, but I do not think the doctors go themselves; they send their specimens, and they get them examined by the best expert available, but they do not think of doing it themselves?—I am going to suggest, Mr. Chairman, that a large number of them do. I do not say that they make the investigation in the majority of cases, but they take part in it. They give the advantage of their clinical experience, on the case from which the specimen is derived, to the expert and so on, and by that means become linked up in the investigation.

4303. You have not made clear to me any special advantage in the fact that the veterinary surgeons of a district meet in this building where there is a laboratory. You have not made that clear to me at all, because I do not think you maintain that they actually conduct investigations themselves; they may discuss them?—They take part in them.

4304. They do not actually conduct any very special investigations themselves, surely?—I am here really to ask for greater opportunities for research work than are presented at present.

4305. That, of course, would mean a very great deal of expense, would it not? A properly equipped laboratory? Have you any idea what that costs?—Yes, it would mean money. I thought that question would be put to me; last night I just drafted this hurriedly, and I think I would prefer to reserve myself on the question of finance. It would not be a big expenditure.

4306. It would cost 20,000*l.* or 30,000*l.* at least, would it not?—Oh, no.

4307. A good building, and a good laboratory would cost that at least?—I would like to put one up for less at my place.

4308. A good built one?—It depends on the principle you adopted. If you wanted a fine architectural structure your money would go. If you wanted a building of utility without that fine architectural appearance you could build it to serve the same purpose and at a much smaller cost.

4309. Supposing we dropped the laboratory idea, you still think that such a society might be subsidised by Government to a certain extent for the purpose, for instance?—I do not separate the society from the laboratory—the subsidy would be to the laboratory, not to the society.

4310. I am making the separation?—I would not.

4311. Just suppose we dropped the laboratory; still a society such as that, meeting for annual discussions and having their specimens investigated in London, might serve a useful purpose?—No. I think they lose one of the greatest benefits of the society.

4312. You would not agree?—Oh, no, I should link both together.

4313. Would it not be better than nothing, because I have heard veterinary surgeons complain that although they came across curious cases and valuable matter, it was lost?—Valuable matter was lost?

4314. Because they could not get it printed and brought under proper discussion?—Yes.

4315. I suggest to you that even if you do not have that laboratory, would a society such as that subsidised by Government, and having discussions, and reports of their discussions printed, not help largely to interest and educate the local practitioners?—Well, by taking away the laboratory you are taking away one of the pillars that is underneath the thought in my mind.

4316. How many laboratories would you require for the kingdom—for, say, Great Britain?—Say about five.

4317. One in Wales, one in Scotland?—I would have two for Wales; I am not including Scotland. You see I mention subsidising existing laboratories. There may be laboratories in a place like Newcastle; there is, no doubt, in connection with the Armstrong College. The same thing would apply to Birmingham—you have those under Government control, so that the erection of laboratories is not a matter of very serious moment.

4318. (*Mr. Hinds, M.P.*) According to your evidence you think this disease of foot-and-mouth could exist in the country, in some parts of Wales, for a considerable time without the people knowing it?—It could, yes. Foot-and-mouth disease, of course, is rather exceptional, because it is one of those diseases which spreads so very rapidly that most men would notice a large number of cows smacking their jaws and lame, but they would not appreciate the disease and its serious character.

4319. You know the disease; you have seen the disease?—I am not here to give expert evidence on the disease.

4320. Can you say whether the young student at the present time, the young veterinary surgeon in the country, is a qualified man to know the disease when he sees it at first?—It is not a disease which is in any way difficult to diagnose.

4321. I understand, of course, that even with these divisional authorities, you would give a disease like this then under their care?—No, I would retain a disease like this—which I would call an imperial disease—in the hands of a central authority, but the administration of the regulations so far as the disease is concerned would be through these local centres, but they would all administer on a uniform system laid down by the central body.

4322. You are aware at the present time what the central authority does in this respect?—Yes, and I have gathered something since I came into the room.

4323. All I want to know is whether these divisional authorities could in any shape or form do better than the central authority does at the present time?—In so far as foot-and-mouth disease is concerned?

4324. Yes; well that is what we are dealing with?—I think they could.

4325. I heard you say something with regard to foreign countries and the inspection of meat, and that kind of thing, drawing adversely that our system is far behind other countries in inspection as regards cattle and meat. Have you anything to add as regards foot-and-mouth disease, or an infectious disease of this kind?—Well, of course, as regards meat we are held up to ridicule. If you consult Ostertag, who is the biggest authority in the world, he makes a very significant remark in one phrase in his work, when comparing the systems of meat inspection in the various countries, so far as England was concerned. He states that in England, which is usually regarded as the cradle of hygiene, it is rather surprising that there is no system, so that he did not think we had any system at all to compare with any foreign system. Of course, in Berlin there is a most elaborate system.

4326. You have nothing to add with regard to foot-and-mouth disease?—No, sir.

4327. (*Mr. Richardson Carr.*) I will not keep you a minute Professor. This authority being as you suggest set up, is that only to deal with animal diseases, or with

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[Continued.]

human diseases as well?—I think I mentioned it that the ideal authority would be a Board of Public Health to take in the whole field of medicine.

4328. To deal with both?—That one could deal with animal diseases.

4329. You know, of course, what the restrictions are with regard to animals coming into this country?—Yes.

4330. Can you suggest anything at all that would lighten the restrictions so as to make the risk of infection less with regard to foot-and-mouth disease?—Through our ports? No, I cannot.

4331. Nothing strikes you; we can do nothing more than we are doing?—Not in that respect, because it seems to me that so long as the disease remains on the Continent there is always inevitably the risk of it coming. I have departed from my *précis* now. We should always run the risk of infection here.

4332. And there is nothing that you can suggest that we ought to do that we have not done?—Birds can bring it, and so on. What are you to do?

4333. You cannot suggest anything else?—No.

4334. You say the local authorities might deal with foot-and-mouth disease, the administration better?—You give me a phrase which aptly applies to my meaning; that is, the local boards would tighten the reins of administration.

4335. And in dealing with that, do you think they would carry out the administration, I do not say the rules, better than it may be done from here?—I do.

4336. And one of the reasons you give for that is, that there might be more familiarity with the people who carried it out?—Yes.

4337. Do you think in a big outbreak of foot-and-mouth disease that that familiarity might be altogether conducive to good results?—I think in the long run; yes, it would do good.

4338. You do not think there might be any element of danger in it in any way that it might not be quite so good as having a man brought down from London and handling it and dealing with it, knowing nobody?—I know the disadvantage possibly you are hinting at, but I think the advantage of an intimate knowledge of the inspector by the people outweighs the disadvantages.

4339. You think that?—Yes.

4340. With regard to foreign animals, knowing the contagious nature of foot-and-mouth disease which, of course, is the thing which we have got to deal with, do you think in face of that it would be at all wise to lessen the restrictions with regard to the importation into this country of live animals?—Well, I do not think so.

4341. You do not think it would be wise?—I would like to reserve a definite opinion on that just at present, if the Chairman has no objection.

4342. You say here also you would rather advise a small experimental farm?—Yes, of course, that does not apply to foot-and-mouth disease; we are referring to animal diseases in general there.

4343. But perhaps you might help us in that way,

as we have got foot-and-mouth disease at heart very much just now, or the prevention of it I should say. Do you think that it would be at all wise to include foot-and-mouth disease on that experimental farm?—No.

4344. You think it would be a source of a danger?—I do.

4345. To the country?—Certainly. I think foot-and-mouth disease is in a different category from diseases which were running in my mind at the time I drew up my *précis*.

4346. (*Chairman.*) You have had a long time of it, I am afraid. There is only one question I want to ask you in conclusion. Personally, I am very strongly in favour, and believe in the good work that our county councils both here and everywhere have done, and all our administrative bodies and everything, and I was wanting to ask this one question. I think you said that the new bodies which you would put up would be more in touch with local feeling. Now do you really think that these bodies for, say, three or four counties, that that administrative council would be more in touch with local feeling than the county councils, which are elected now by the popular vote?—Well, I think we are rather at a cross argument, are we not?

4347. What I gathered you to say was that these bodies as regards carrying out these diseases would be more in touch with local feeling. You did say that, I think?—Than the present one?

4348. Than the present organisation?—Than the present organisation.

4349. Under county councils?—Yes.

4350. Do you think that really, honestly, these bodies would be more in touch with local feeling, that local feeling would be more in touch with them than with the body which administers this work in its own county, and who knows local feeling, the local people, the local wants?—Than the county council, say?

4351. Yes?—Not in the general sense, but I think I have endeavoured to point out that in this special question of disease there are advantages in regard to this body which a county council does not possess. I pointed out the disadvantages in the matter being delegated to bodies like the county councils and the district councils and I think I gave my reasons.

4352. I am not talking about district councils, I am talking about this disease; I am talking about these animal diseases, the administration of which is carried out by the Board of Agriculture and by the Contagious Diseases Committee of the county council, and I rather gathered from you that you thought there was a sort of feeling against these bodies, and that a better feeling would be shown if it were carried out by a body which you propose to set up in the different centres?—Yes, I think it would.

4353. Thank you, Mr. Share-Jones. We are very much obliged to you for coming?—I am much obliged to you, sir, and to you gentlemen for the courtesy with which you have received my remarks.

The Witness withdrew.

Captain EDWARD NORTON, Marine Superintendent of the Clan Line, called and examined.

4354. (*Chairman.*) You have very kindly offered to come and give us a little help if you can. You are the Marine Superintendent of Messrs. Cayzer, Irvine & Co.?—Yes sir, the Clan Line.

4355. They are shipowners of London?—Yes.

4356. To which docks do your vessels come?—Chiefly Tilbury Dock; occasionally they come to the South West India Dock, but chiefly Tilbury Dock.

4357. And your carrying trade is mostly from India and Australia, is it not?—Yes.

4358. Now, what we want information as regards the stowage of the cargo on the ships, and we have had some evidence this morning from another line. We should rather like to hear from you, if you would kindly just tell us, first of all, if you bring many hides over?—Oh, yes, a great quantity.

4359. Both wet and dry?—The majority dry from India, sir, not many wet.

4360. And do you bring much grain?—Yes, a con-

siderable amount. I have not got the figures at hand, but a considerable amount.

4361. And you bring a lot of other foodstuffs besides, cattle cake, &c.?—Oh yes, cotton-seed, cake, grain of all sorts, linseed too, I think, is considered a foodstuff, is it not?

4362. Yes. Will you tell the Committee about hides? Where do you stow the hides? First of all, I take it, you stow all your grain in the bottom hold, do you not?—Yes, but not in the same compartment as hides.

4363. No, I was coming to that; but, as a matter of fact, you stow your grain in the bottom hold?—Not always, sir, we have to keep a certain amount uppermost in the vessel to make her seaworthy. We reckon to have one-third of our weight above between decks to make the vessel more easy and seaworthy, consequently the whole of the grain would not be in the bottom of the vessel.

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4364. Where do you stow the hides?—We invariably stow the hides in a separate compartment—in what we term a chow-chow compartment.

4365. What is a chow-chow compartment?—Well, it is an Indian expression. It means to say, it infers anything which is not flavourable, smellable, of a contaminating nature. It is an expression that is used in that trade.

4366. And those hides are kept absolutely separate from all other things you carry?—As far as it is possible to do so. Sometimes the foodstuff exceeds the quantity for which there is space in the other holds. In such a case we should have to stow it in the same compartment as the hides, but special precautions would be taken under those circumstances to keep it in a block by itself, if I may express myself, in one end of that compartment entirely free. The hides would never be put on top of it.

4367. No; but, as a matter of fact, if you are pressed you do sometimes; you are compelled by force of circumstances to place hides in the same hold as foodstuffs—occasionally you are?—Yes, in the same hold, but in a different portion of the hold.

4368. In a different portion?—We rather leave space than stow hides in any part of that compartment that would be likely to cause contamination. We have to do so to save claims upon our company. It would involve us in a great expense if we were to stow them together, causing contamination.

4369. But, as a matter of fact, they are sometimes in the same hold?—I cannot say they are not; yes, sometimes they are in the same hold.

4370. (*Major Dunne.*) Is there any partition?—Well, the vessel is divided up into several watertight partitions, compartments, but we were speaking about the special compartment, are we not? There are partitions inasmuch as there are decks laid. There is the bottom of the vessel and an orlop deck, after that a between deck.

(*Chairman.*) What I think Major Dunne wants to know from you is this, that if sometimes you are compelled to place hides in the same hold as foodstuffs, is there any division between those hides and the foodstuffs?

4371. (*Major Dunne.*) Horizontally?—Not a horizontal division, oh no.

4372. (*Chairman.*) What keeps the hides away from the foodstuffs?—The different decks.

4373. No, but I thought you said that the hides are sometimes placed in the same hold?—Compartment, yes. Well, that compartment is divided into sections—into decks. You see, the vessel is cut up into five, six, or seven watertight compartments, and each of these compartments is fitted with decks, so that you might put 1,000 tons of wheat or 500 tons of wheat or other grain stuff in the bottom part of the vessel; batten that down, it is comparatively a compartment on its own, though it is not watertight. Then you come to an iron deck above that, where you could stow hides, and still being in the same hold; in the same watertight compartment, but in no way touching or in connection with the cargo underneath it.

4374. The hides, I take it, are above the foodstuffs?—Yes.

4375. And between the foodstuffs and the hides there is an iron deck?—Yes, an iron deck.

4376. Then is it impossible that there could be any contamination between those hides and the foodstuffs?—In my opinion, yes sir, quite.

4377. (*Mr. Nunneley.*) It would not be airtight, would it, this iron deck?—No, it would not be airtight; it would not be watertight or airtight.

4378. (*Chairman.*) Do you know if these hides before they are put on board in India or Australia, are disinfected?—From India, they are nearly always tanned or pickled. I have never seen raw hides from India.

4379. But are they disinfected to ensure freedom from disease?—Oh, yes. Every voyage we are granted a certificate; we should not ship them without a certificate.

4380. What are they disinfected with?—I do not know, I am sure.

4381. Are you sure it is a disinfection against disease

or is it simply a disinfection to preserve them?—Oh, no, not a preserving disinfectant. I have always been given to understand, and I am of opinion, it is to prevent smell.

4382. But is it to prevent anything that there may be on the skins from disease of any kind, diseased animal skins?—I do not know. I understand we never ship them without we get this Government certificate, a certificate which is granted by the Government to say they have been duly disinfected.*

4383. The Government of India?—Yes. Those are the dry hides, the dry tanned hides, and also the hide fleshings, that is, the clippings from the hides, and the pickled skins. Pickled skins are carried in brine casks.

4384. When you get them to Tilbury what part of the cargo is taken off first, are the hides taken off first?—It all depends upon circumstances; not always. The hides may be required promptly, or, on the other hand, cargo in the bottom of the vessel may be required promptly. We should deal with that first, which can easily be done by cutting down a trunkway through the hatches and leaving the cargo on the decks. They would not come in contact one with the other in any way by doing that.

4385. Are those hides taken off by barges to the shore?—99 per cent. of them are carried by barges to London.

4386. What is the other per cent.—over the quay?—Over the quay.

4387. And come by rail?—Yes. The greater part of the hides are first put on the quay, sorted, and then they are delivered to barges. 99 per cent. would go to barges, the other per cent. would go by rail to London.

4388. When they are put on the quays, are they put near any foodstuffs?—They are not stacked with any other

4389. No, I know; but are they put adjacent to them?—Not in the same warehouse. On the same quay, but not in the same shed. Very rarely foodstuffs come on to the quay at all, but are invariably delivered direct from the steamer to the consignee's barge.

4390. You do not bring any sheep's heads, I suppose, from India, do you?—No, sir, bones.

4391. Nor calves in their skins, or anything of similar kind?—No.

4392. Is the hide business decreasing or increasing?—Increasing, from India.

4393. Is it?—Yes; we have more hides every year for London and transhipment.

4394. You know India is very full of disease?—Yes.

4395. Of course, it is a most important thing that we should know if these hides are properly disinfected. You cannot tell the Committee really what they are disinfected with, and what they are disinfected for?—No; I do not know; that does not come under my supervision.

4396. Where should we get that information?—From the Indian Government. I think I ought to make it clear, sir, that the majority of hides which we carry from India are tanned. We get no wet hides; very few smelling hides at all from India; they are all dried or tanned, and packed in bales covered with matting and gunny cloth, and some pickled, in pickle in casks. They are entirely different from the hides and the skins which we carry from Australia.

4397. Do you carry ponies?—Very seldom homeward; outward we do, but very seldom homeward from India.

4398. How often, once a year, twice a year?—More than that; say, 20 horses during the year to Tilbury Dock by all lines from India.

4399. Horses?—Race horses and polo ponies, coming home from India; occasionally a little live stock, dogs or wild beasts.

4400. What about dogs; they go into quarantine?—Yes.

4401. (*Sir Bowen Bowen-Jones.*) Do you bring any sheep or goat skins?—Yes, sir; we bring sheep and goat skins, both from India.

* The witness withdraws his evidence as to the requirement of hides being disinfected before being shipped from India. A certificate of disinfection is required for hides imported to America.

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4402. Are they pickled or disinfected in any way?—We have a disinfection certificate with them before shipment to American ports.

4403. You do not know quite what the nature of the disinfectant certificate is?—I am sorry I do not; I do not see it.

4404. Could your company send us a copy of that?—Yes, sir; I have no doubt we could get it from our agents in India.

4405. (*Mr. Nunneley.*) Are the bulk of the hides that you bring used in England, do you know, or are they transhipped to America?—Both, sir. A great many are transhipped to Boston, Philadelphia, and New York, chiefly.

4406. We have had evidence this morning that of the hides from Russia 95 per cent. are transhipped?—We do the whole of our transshipping in London.

4407. They would be landed, and then put on again?—Quite so.

4408. They are not taken from one vessel straight into another?—They are landed, taken into barges, and the barges taken to the various steamers for the Continental ports and American ports.

4409. Are the greater part of these for America, would you suppose?—No; I should estimate, roughly, that one-third of the hides we carry from India go to America, and two-thirds to London.

4410. These hides are not disinfected in England again before they are shipped to America, are they?—No.

4411. We have been told that the American Government are very strict that all the hides that they import are very effectually disinfected?—To the best of my knowledge, they are only disinfected once. We only get one certificate, that is before shipment in India.

4412. You do not think they are disinfected again in England before they go to America?—I am sure they are not.

4413. (*Major Dunne.*) As regards the hold; we have been asking various witnesses certain questions regarding the disinfection of holds; in your Line, does any sort of disinfection of holds take place at all?—Previous to loading, before the vessel leaves, the holds are thoroughly cleansed, bilges limewashed, and holds disinfected throughout, and surveyed by a surveyor appointed in the interests of all concerned, but not after commencing loading.

4414. For instance, if you carried hides in one journey, would all the holds where these hides had been, be disinfected before another cargo was put in?—Yes; hold and bilges, and every part of that compartment.

4415. What form does this disinfecting take; is it just simply limewashing, or is there any carbolic used?—No; washed with water, and the bilges limewashed, and the sides of the vessel, of course, are painted, but the painting is not done every voyage; that is done periodically.

4416. Do you do that on your own account or because of any regulations? Do you simply do it in order to preserve your own cargo, and in order that there may be no charges made against you for damaged goods?—Quite. We are not forced to do it. There are no regulations that force us to do it; it is done just to keep our vessels in good carrying condition.

4417. Would your owners, do you think, object if there were any compulsory regulations enforced as regards a more severe disinfection?—No, I think not; I do not think greater precautions could be taken than my company take in that respect.

4418. They would not object either on account of expense of a more efficacious, or what some people might consider a more efficacious form of disinfecting, or on account of the time that this disinfection might possibly take?—No, I maintain what I said before; I stick to what I said before; I do not think they could take greater precautions no matter what was forced upon us, I do not think we could do more to ensure the safe and proper delivery of a cargo that we were dealing with.

4419. Just one question as regards the skins themselves; I understand no inspection takes place of the skins on arrival here; all you get is a certificate on the far side?—As far as I know, you see we deliver

to consignees' order, and after that delivery takes place the skins pass from our custody and we have nothing more to do with them.

4420. After they have left your ship?—We take a receipt and we have done with them; we do not follow them any further.

4421. (*Mr. Morrison.*) Disinfection of the holds of the ship is entirely voluntary on the part of the company; there is no law?—There are instances where it would be compulsory, I mean in such cases as the Government taking over one of our vessels for special services. They might think it necessary to do more than we have done probably after we had done it, but excepting that, excepting going to Government work under Government commission, I know of nothing.

4422. And this disinfection applies to Government vessels?—Whenever the vessel is emptied, always; whenever she is empty, which is, roughly speaking, once in three months.

4423. Do you know if the same custom applies to other companies in the trade?—I think not, I do not know. I can vouch for my own company, but I cannot say for other companies, I should say in all probability not—in what we term tramp steamers, irregular steamers.

4424. And that would apply to South Africa, India, and Australia, of course?—Yes.

4425. There will be vessels coming from these which do not, never?—Yes, probably. Vessels which are not so well regulated as I am bound to think those of my company are.

4426. I suppose you carry bones, do you not?—Yes.

4427. Large quantities of bones?—Yes, large quantities, probably some 50 tons in the course of the year, bones from India, a number of horns; a great quantity of horns.

4428. Where are these stored in the ship?—As a rule they are used for what we term broken stowage in the smelling hold, in the chow-chow hold; they would not be put in the same hold as food-stuffs. They come very handy for that purpose, for filling up corners amongst casks of pickled skins and bales of hides.

4429. They would practically receive the same treatment as the hides?—Yes, sir.

4430. Then you carry large quantities of linseed, I suppose, and cotton-seed cake?—Yes, large quantities.

4431. These, I suppose, could not come in your opinion into contact with any hides or any place where hides had been?—No, they are in an air-tight and water-tight compartment.

4432. How are they taken out from the hold?—By hydraulic cranes and ropes.

4433. Delivered in bulk?—In bags.

4434. Do you receive them in bags?—Oh, yes.

4435. Then they are put into trucks or barges?—Barges as a rule.

4436. And are they then sent to various centres?—Wharves and depots; centres.

4437. To sheds?—Yes.

4438. (*Chairman.*) Did I understand you to say to Major Dunne that you disinfected with lime-wash; after you have washed, you then lime-washed the hold?—Certain portions; the bilge of the hold would be done.

4439. Where the hides are; what do you disinfect those places with?—That is merely washed with water and painted periodically.

4440. The side?—The side. The deck is also painted; the iron deck.

4441. You sweep out your holds, do you not?—Yes.

4442. What do you do with the debris of the sweepings?—That all depends on where we are; at sea we should throw that overboard.

4443. When you get to Tilbury, what do you do?—Put it in a dust-bin prepared for the purpose, which is afterwards removed by the local authority.

4444. By the local authority; it is not burned?—I do not know what becomes of it. It is removed by the Port of London Authority, what they do with it I do not know. They charge us for removing it.

4445. Because we had evidence this morning from another Company that the debris was left in the ship and it was then burned or thrown overboard; left in

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the ship for two or three days?—We should not burn it.

4446. Anyhow you hand it over to the local authority. Is it kept long on the ship before it goes off to the Port of London Authority?—No. As soon as the compartment is empty that hold is swept up and the debris is removed from there to the dust-bin on shore, which is then under the supervision of the Port Authority. If that compartment is not required off-hand it may not be swept up until to-morrow, when the ship is at sea, it would then be thrown overboard.

4447. (*Sir Bowen Bowen-Jones.*) Does the grain or cake come in contact with the dust?—No, the vessel would be empty then, sir.

4448. You empty one deck where the hide are placed, which would be the upper deck; you must empty that before the grain is got out. You open down to the grain. Would it not be possible for the grain to become contaminated with the dust from that upper deck?—It would be if the upper deck were swept while the grain was there, but that would be a very foolish undertaking. I have never seen such a thing done. I would not allow such a thing to be done, to sweep the upper compartment so that the filth might fall on to the goods in the lower compartment.

4449. But supposing it were swept and the dust was in the corner of the hold, is it possible that the grain may be got out from below while that remained there in a heap?—It would be possible if it were done like that.

4450. Would it be probable?—No, it is not probable, sir.

4451. It might occur, but it is not your custom to leave it on the deck. Is that what I understand? You remove it to the dust-bin?—Yes, quite.

4452. (*Major Dunne.*) I suppose when your hatches are open you have removed all your 'tween deck cargo to get at your grain-stuff; if there is a wind blowing there is nothing to prevent the dust being mixed up; that you cannot prevent?—Yes, it might then. If you will allow me, I must impress upon you that it is so seldom we carry hides and foodstuffs in same compartment; it is a very exceptional circumstance.

4453. (*Chairman.*) How often do you carry them; once or twice a year?—I was trying to think of the last time I saw it and I cannot remember.

4454. Very seldom?—Very seldom indeed, our Company would sooner the masters brought the ships home with space in the vessel than do such a thing. It might be done if pressure were brought to bear by a merchant who is a good customer or under exceptional circumstances, but it would not be the custom.

4455. (*Mr. Richardson Carr.*) There is no loose straw or hay comes over in the vessel I suppose?—From India, no.

4456. Or from anywhere?—I have seen it in the American trade, but my experience in the American trade does not allow me to say much about it.

4457. (*Sir Bowen Bowen-Jones.*) Australia?—Australia, no.

4458. (*Mr. Nunneley.*) When you bring polo ponies

you would have to have hay and straw for them?—But they are on the main deck.

4459. There would be hay and straw for them—Yes; but it would not be in the hold.

4460. When these horses are landed if there is any hay or straw left, is it ever landed, what is done with it?—Yes, the groom usually takes charge of it and I believe it is his perquisite, he takes it with him.

4461. (*Mr. Richardson Carr.*) He does take it off the ship?—Yes, he takes it off the ship.

4462. (*Mr. Nunneley.*) Occasionally there might be a bale or two from India?—Yes, sir; true sir.

4463. (*Mr. Morrison.*) Is there any way to prevent that, because that is illegal; is there no official to overlook that sort of thing?—It is done every day from America, is it not?

America, yes; but India.

4464. (*Mr. Richardson Carr.*) A horse coming from India would have hay and straw for his requirements while on board, there would be some over, several trusses of hay and bundles of straw; what becomes of that?—It is taken away from the vessel.

4465. No restrictions about that?—No.

4466. I could come and take it away and take it on a farm?—I know of no restrictions to prevent you doing so.

4467. (*Mr. Morrison.*) Is there a regular dust-bin on shore to which the debris is carried?—Yes.

4468. Do you know what becomes of the debris afterwards?—To the best of my knowledge I know that it is loaded in railway trucks, dust trucks, and to the best of my knowledge it is taken away on to waste ground, the Port of London Authority's waste ground, and deposited there; but what becomes of it after that I do not know.

4469. Is it taken for manure, do you think, to manure fields?—I do not think so; I see huge bonfires there at times.

4470. You think it is burned?—I think it is burned; but I am not sure on that point.

4471. (*Chairman.*) You know hay and straw are forbidden to be landed in this country?—I was not aware of that fact.

It is prevented from foreign countries.

4472. (*Mr. Nunneley.*) It is prevented from foreign countries where the disease is rife?—Is it from India?

4473. (*Chairman.*) What kind of quantity do you think, now, have you ever of your own knowledge known these grooms taking as their perquisite a bale or two?—A truss; I will not say two.

4474. And they have taken a bale of straw, I suppose?—Yes, I have seen that done, and the remainder of the corn; a bag or two of corn, but not hay and straw in any great quantity.

4475. But you have seen a truss of hay go?—Yes, I have; I did not know that there was any restriction prohibiting it.

4476. I am not sure there is from India; but at the same time India is full of foot-and-mouth disease?—Yes.

4477. Thank you very much?—Do not mention it, sir; a pleasure.

The Witness withdrew.

Tuesday, 5th March 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (*Chairman*), presiding.

Sir HARRY VERNEY, Bart., M.P.
Sir J. BOWEN BOWEN-JONES, Bart.
Mr. CHARLES BATHURST, M.P.
Mr. WILLIAM FIELD, M.P.
Mr. GEORGE R. LANE-FOX, M.P.

Mr. RICHARDSON CARR.
Major E. MARTEN DUNNE.
Mr. E. E. MORRISON.
Mr. E. M. NUNNELEY.
Mr. W. H. F. LANDON (*Secretary*).

Mr. R. CANTRELL, I.S.O., of the Irish Agricultural Department, recalled and further examined.

4478. (*Chairman.*) You want to correct your evidence; will you tell us exactly what it is?—Yes, lest I

should have conveyed an erroneous impression. The point is in regard to the imports into Ireland from the

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Mr. R. CANTRELL, I.S.O.

[Continued.]

Continent. I think I rather conveyed the view that the direct imports were not of very great magnitude. I have since obtained the figures as to the total imports direct into Ireland and the countries from which they came, and the result is shortly this: The estimated value of the imports into Ireland from all sources in 1910 was about 65,000,000*l.* Of this amount 14,500,000*l.* came direct from the United States, the Colonies, and from Europe. I was under the impression, not having all the figures before me, that the greater proportion of this trade was from America and the Colonies. More than half of it was, but about 7,000,000*l.* worth came direct from Europe. That is, 7,000,000*l.* out of the 65,000,000*l.*

4479. (Mr. Field, M.P.) 7,000,000*l.* comes from where?—From the Continent of Europe. As regards the proportion of the imports from Great Britain which may be of Continental origin, there are no means of determining the exact figures. The result of any inquiries that have been made into the matter is that it is probable that about one-third is of Continental origin; that is to say, from 15,000,000*l.* to 17,000,000*l.* in 1910.

4480. (Mr. Bathurst, M.P.) 15,000,000*l.* to 17,000,000*l.* from where?—50,000,000*l.* is the value of the goods that came from Great Britain, and it is estimated that about 17,000,000*l.* of that amount may have come from the Continent. So that the indirect Continental trade was about 17,000,000*l.* and the direct 7,000,000*l.* All classes of goods are imported direct; raw materials and manufactured goods. In answer to a member of the Committee, I said that the larger proportion of the imports of oil-cake came from England. That is not quite correct, as a large portion of the cotton-seed cake comes from the United States, and linseed cake both from the United States and Russia.

4481. (Mr. Field, M.P.) As I was not here last time, may I ask a few questions? To what cause do you attribute our freedom from foot-and-mouth disease in Ireland principally for so many years?—I should say to the precautions which were adopted to prevent its introduction.

4482. Well, of course, these precautions are common to the three countries. Would you say that England acts as a kind of buffer?—Yes; I said so to the Chairman on Thursday last. England does, but in so saying I perhaps conveyed the impression that she acted as a complete buffer, which would have been ignoring the direct imports from the Continent.

4483. Ireland is generally the buffer to England in other things, but in this respect I suppose—?—In this instance I think England returns the compliment.

4484. Do you remember the outbreak, as I do, some 29 years ago?—I do.

4485. Is it your opinion that the precautions now exercised in England with respect to slaughtering the cattle are warranted in point of the enormous injury that would be done to cattle in this country if an outbreak took place?—Slaughter?

4486. Yes?—Most decidedly, quite warranted.

4487. Because we did not slaughter at that time, you remember?—I know we did not then. The disease spread so rapidly that there was no practical use in doing so.

4488. You look at it as most members of the Committee do, that it was a financial impossibility to slaughter?—It was a financial impossibility to slaughter. The disease was not under control. It spread so rapidly. In the case of the more or less isolated outbreaks that occurred in England of recent years, decidedly the slaughter policy was justified in every sense.

4489. It is your opinion, Mr. Cantrell, that that policy which is good for England is good for Ireland?—Yes, certainly.

4490. We are a United Kingdom in that respect?—A very United Kingdom. I may mention that towards the end of the outbreak that you speak of 27 years ago, we did pass a Slaughter Order.

4491. Yes, I know you did?—And slaughtered the last remaining beasts that were affected.

4492. I will just ask one or two questions more. Some of the members of the Committee here seem to

think that sheep are not so readily affected by foot-and-mouth disease. Was it your experience during that serious outbreak that sheep became affected to a large extent in Ireland?—There were 17,600 sheep affected as against 97,000 cattle.

4493. That is about one-fifth. You have the same system in the Department of Agriculture in Ireland as exists in the Board of Agriculture in England?—Substantially the same.

4494. That is with regard to the reporting of this disease?—Yes.

4495. Through the local authorities?—Through the police. The police report to the local authorities and to the Department of Agriculture.

4496. And the local authorities, of course, all have veterinary surgeons?—Yes.

4497. Then, if anything occurs of a serious nature, you send down one of your experts?—One of our own inspectors goes.

4498. But you have had no necessity to do so lately?—No; not as regards foot-and-mouth disease.

4499. No, because you have none?—No. We get reports from time to time which are investigated.

4500. Which they thought were foot-and-mouth disease, probably reported as likely to be foot-and-mouth disease, but is found out not to be?—Reported as likely to be foot-and-mouth disease, but found out not to be.

4501. Is it a fact that Ireland has a cleaner bill of cattle health than any portion of the three kingdoms at present?—I think that is the case so far as scheduled diseases go.

4502. I did not mean political diseases, because we are crammed with those, but as far as cattle diseases are concerned we certainly are?—As far as the diseases with which we have to deal under the Diseases of Animals Acts.

4503. Just one question, sir; I do not know that it is quite in order. With regard to anthrax; have we had many outbreaks of anthrax lately?—No; I gave the figures the other day.

4504. It is germane to this question. Do you think these isolated cases of anthrax in Ireland were introduced by any foreign contact?—We have not been able to discover.

4505. (Mr. Nunneley.) Might I ask, arising out of what has occurred this morning, can you give us any further particulars as to what articles are imported direct?—Yes.

4506. I was only thinking that if you import certain articles largely direct from the Continent and abroad, and do not get foot-and-mouth disease by that, those same articles are not so likely to have brought it to England; but if there are any articles which you never import, and which we do import, or which you only import through England, that would rather throw more suspicion on these articles in England?—I have a list here, extending to 33 pages, of imported articles.

4507. I do not want all that, but do you actually import direct any milk or dairy produce?—We do not import any milk.

4508. (Chairman.) I think I asked you that?—You did, sir.

4509. (Mr. Nunneley.) Any dairy produce, butter especially?—There is Danish butter.

4510. Would that come direct?—No, that comes mostly through England.

4511. And no poultry or eggs, I suppose?—Russian eggs come direct.

4512. To any great extent?—About 19,000 great hundreds of eggs came in 1910 from Germany and Russia. That is not very much. There is wheat and barley.

4513. They come direct, and cake comes direct?—Some cake comes direct.

4514. Some linseed cake and linseed and cotton cake from America?—Oh, yes, largely. A small amount of hair comes.

4515. (Mr. Lane-Fox, M.P.) Do you import hides at all?—The amount of hides that came direct was very small, 237 cwt. in 1910.

4516. (Mr. Morrison.) Can you tell me how long the voyage takes from the Continent to ports in Ireland as a rule?—Most of it comes either from Hamburg or

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from the Belgian and Holland ports. Wine comes from Bordeaux. I cannot tell you the exact time; some days.

4517. It would take a considerable while?—They are not very fast boats.

4518. It might even take 10 days or a fortnight?—I could not say.

4519. That would have a bearing on the infectiousness?—It would.

(Chairman.) Thank you.

The Witness withdrew.

Mr. ALFRED SEYMOUR-JONES, called in and examined.

4520. (Chairman.) I am sorry we had to put off hearing your evidence the other day?—That is all right. I hope it will not be to the disadvantage of the Committee; I have been able to get a little information since then. I thought, if I brought these they would be an ocular demonstration (pointing to certain samples in bottles).

4521. (Mr. Field, M.P.) I hope you are not going to experiment on any member of the Committee, are you?—No, sir.

4522. (Chairman.) Mr. Seymour-Jones, you are ex-President of the International Association of Leather Trades Chemists, are you not?—Yes.

4523. And you are Honorary Vice-President of the International Association of the Leather Industries?—Yes.

4524. And Chairman of the International Commission for the Preservation, Cure, and Disinfection of Hides and Skins?—Yes.

4525. You are the inventor of the Formic-Mercury process for the sterilisation of industrial anthrax, with special application to hides and skins?—Yes.

4526. I gather from your précis that you propose to speak in regard to the place of origin of suspected hides and skins, with special reference to means to be applied to disinfect the hides and skins from infected countries prior to shipment?—I do.

4527. Now, will you first of all tell us about the place of origin of these suspected hides?—I should like to divide my evidence practically, into three parts. First the place of origin, second the method of collection and transport and the question of contagion, third the question of sterilisation. There are certain features not understood in regard to the leather trade as a whole. When I speak of the leather trade, I speak of everything that comes with a hide, or a sheepskin, or a goat's skin. There are at least two points that are not thoroughly appreciated. The first is that the leather industry, as a whole, takes rank among the six great industries of the world. The second is that it is the only one of the six great industries which depends entirely for its valuable raw material, upon what is an absolute by-product of another of the six great industries, namely, agriculture. That is a feature which I think the Committee should not lose sight of. No stock-raiser grows, for instance, an ox for the value of the hide, no sheep-grower grows a sheep for the value of its skin. When you come to the goat's skin we are treading perhaps on more delicate ground, because goats are not so largely an item of food and the skin is somewhat of value, but even in that case they are not entirely grown on account of the skin; therefore it is, while being one of the six great industries, the only one which depends for its raw material upon an absolute by-product. The tendency with all by-products is to treat them as by-products and with indifference at the hands of people as to exactly what is going to happen to them. Now, the leather industry, coming to the question of skins, is divided into two sections, one known as the heavy leather industry and the other known as the light leather industry. The difference is not very clearly defined, but it practically consists of this: The heavy leather industry tans only the hides from oxen and cows and so forth, and terminates its operation when it is made into leather for soles for boots. That industry may become a light leather industry when they start to make three hides out of one by the operation of splitting and dressing them, that is making them thinner in substance and using those hides for covering motor cars or outsides of boots or Army purposes, and so on. But the sheep-skin and

goat-skin and calf-skin industry essentially belong to the light leather industry.

4528. (Sir Bowen Bowen-Jones.) You did not mention the horse?—The horse plays its part, but the bulk of the horse skins are tanned in Hamburg, and it is only the part over the rump, which is called the crup, that is used for boots, because of its horn-like formation in the interior. Colt skins are exported from Russia and are used for making boots, but otherwise horse hides hardly enter into the industry. Walrus, porpoise, and other such sea animals are tanned to a limited extent. In the question of cure, I will deal with that first before dealing with the provenance of the hides and skins. When I speak of Great Britain, I include Ireland and Scotland, and I will not forget little Wales. All the hides are what are termed "green hides." The term "green" is applied to hides which have not received any cure. It would not be strictly accurate to say that hides are never salted in England; they are salted, but only at the instigation of the tanners. A few butchers who are cute and want to hold their hides for a rise in the market, will salt and hold them, but taking the English hide industry all the way through, all the hides may be classed as green hides, that is unsalted, uncured in any shape or form. That same remark applies to the sheepskins, although some of the sheepskins will be dried. But they are quite isolated quantities, and are chiefly from dead sheep that have died on the mountains. The imported hides are various. We import about 13,000,000*l.* sterling worth of hides; it is between 12,000,000*l.* and 13,000,000*l.*; I think it is 12,800,000*l.*

4529. Is 13,000,000*l.* sterling the value last year?—13,000,000*l.* sterling; that would be 1910, the 1911 figures are not out yet. 1910, 13,000,000*l.* sterling worth of hides, that is hides and skins grouped together.

4530. (Mr. Field, M.P.) That will include sheepskins?—Yes; that includes also goat skins. The Return designates "raw hides and skins"; a large proportion of these will be, and are, what is known as salted hides. The salting consists, in the main, in taking the hide after it has been flayed and cooled, by covering the flesh side with salt, using about 25 per cent. of the weight of salt to the weight of hide. The method on the Continent, where public slaughtering in public abattoirs is compulsory, is as follows: They take the first hide and lay it hair-side down and shovel the requisite quantity of salt over the flesh and spread it over the hide, then folding in what we call the shanks, that is the shoulder part, and then the flanks, the two hind parts, and then the neck; then they will place on that, another hide, and put on more salt, and perhaps they will then spread the heap out so that they will build a big square heap three feet high and perhaps the size of this room with hides, each hide receiving about 25 per cent. of its weight of salt. In the Thüringen district and certain portions of Bavaria they wash the hides, after flaying them, and before salting, to remove all the blood and dirt, which feature enables them to get a higher price for their hides than any of their neighbours. That method has also been followed in certain districts of northern Italy where the very primest hides come from. When I speak of prime I speak from the leather trade standpoint. Another method which has come into vogue on the Continent is the use of sulphate of sodium in place of salt, sodium sulphate, Glauber salts. Its advantage to the hide shipper is that the hide does not lose weight as it does in salting. It arrives at the tannery very much cleaner. It has a cleansing effect, and further it is an extremely cheap commodity—only from 10 to 12

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per cent. of it need be used on the weight of the hide. Some of the hides abroad are also what we call brined, that is, they are put into salt brine pits, but there are practically none of these coming from the Continent. Before passing from the Continent, I may say there are no dry hides which are dried on the Continent or so-called earth paste cures, which I will just deal with, or arsenicated hides. But one gentleman who is a very large importer of pig skins—he was a Scotchman—sent out to a district in the Danubian area some formaldehyde or formalin, which is advocated as a preservative. He sent this out with a view of testing its preservation of pig skins. Two years ago I got a letter from him stating that it appears these people instead of using it drank it.

4531. They thought it was Irish whisky, I suppose?—He being a Scotchman said he hoped that they diluted it, but so far no pigskins had reached him from that district or anyone else and there has been an ominous silence ever since. I mention that as one of the humours that have come up in the International Commission for the Preservation, Cure and Disinfection of Hides and Skins. Formalin is totally unsuitable for the preservation of hides, therefore it is impossible on account of its leather-making qualities. When I spoke of Europe, I left Russia out of the question, rather looking upon Russia as the buffer-State between the East and the civilised West. Most of the hides from the south of Russia are salted. Those from the interior and Siberia are nearly all dried. All the calves' skins that come from Kourland in Poland are dried. The sheepskins that come from Siberia are also all dried. The bulk of those are arrested at Moscow and dewooled in Moscow. Some 20 years ago I was called in to a large factory in Moscow to investigate the question of Siberian plague—I will touch upon that later on—where some five deaths were taking place every week from Siberian plague, which is another name for anthrax. The plague was attributed to the dry wool skins from which I isolated the bacilli of anthrax.

4532. (Chairman.) You said they were all arrested at Moscow; these hides from Siberia?—Yes, they come to a stand there and the bulk of the skins are worked up there. I do not know of any that are exported to England, but they are exported to Germany. I know people in Germany who buy them, but I have not traced any of the skins further. I would add that the Kazan sheep (beyond the Volga) are sheep which are drawn from the northern portion of the Steppes, coming over here in the wool in the dried condition; but I was referring particularly to the Siberian. The Kazan deliveries probably include those from the Kalmouks and tribes from the south, including probably those from Samarkand, Bokhara, and Khivah, and all that territory. Then, travelling down east you come to India. The curious thing is that in India the bulk of hides are what are known as "earth paste" or "arsenic cures." If you were to take one of these earth-paste cured hides which are labelled arsenicated, you would not be able to find any arsenic present; nevertheless, arsenic is used, but in so minute a quantity that it is scarcely traceable. The method of that cure is: the hides after slaughter and while moist are covered with an earth-paste, which they procure from the ground anywhere from Patna to beyond Agra, quite an extensive area. It very largely consists of sulphate of sodium, Glauber salts. There is a little magnesia and some other salts present, but Glauber salts is practically the basis of it. It is an extremely unsatisfactory cure. They are dried in the full blaze of the Indian sun, flesh side out, either laid roughly over the rough ground, or pegged out tight so as to get as much area as they can, to make them appear big. Anything to perpetuate a fraud. One has to use the term quite advisedly in the Report of this Commission which is just about to be published. The whole object of the paste is to add weight. It is to cover up the defects in the hide. It also covers up any effects produced by diseases that may have been observed or may be observable by an ordinary veterinary surgeon, before the animal is killed. These hides may have been arsenicated, sprayed or sprinkled with white arsenic which has been dissolved in caustic soda and then diluted. Arsenic is not a germicide, but an insecticide.

It is quite inadequate as a disinfectant. Its only object is as an insecticide, and the native employs it in order to prevent a certain beetle, the *Dermestes vulpinus*, from eating the hides. It has been found that arsenic does stop their depredations. In India, too, many of the hides and the skins are salted, but those in the main all come over in what is known as the dry-salted condition; they dry all hides and skins in the hair. There are no wet hides shipped from India. Wet skins are shipped, that is the sheep and the goat, when the hair has been removed. They are subjected to what is known as a pickle, which may consist of sulphuric acid and salt or alum and salt, and nearly all those skins are shipped in casks or barrels to America for the glacé kid industry. Those sheep skins and goat skins which are not so shipped will be shipped sun-dried in the hair state. Turning further east to the Malay States, there everything comes forward in the dry state. In China we get nearly all of them in the dry state. I may say, gentlemen, I am speaking from personal experience in all these countries, not from hearsay evidence. In China the hides and skins are nearly all in the dry state, but latterly a few of them have been coming in along with those Chinese hogs which were sent over. They were sent over in the chilled state; but they proved unsatisfactory. Chilling or freezing a hide is fatal to sound leather in the tanyard. A few hides have been salted from there, but they have come in dry-salted. Japan practically produces no hides or skins for export, but they are importers. Korea exports hides, and another amusing feature in the investigation is, that in Korea they spread the hides over the public streets for the people to walk upon and the vehicles to run over. Their belief is that they not only increase in value, but they increase in weight. That is the way they pave the public streets; but we buy the hides afterwards. Then, Australia ships some hides; but she is also a large consumer of hides, and increasingly so. But her main shipments are woolskins dried, and the dewooled pelts are shipped in pickle in casks, the pickle being sulphuric acid and salt. That is following very much the lines of what I shall have to show you later. New Zealand is also a similar shipper, and her treatment follows the same lines as Australia. Patagonia: nearly all the products of Southern Patagonia come through Punta Arena. There are several very large killing establishments, mainly for sheep. The Patagonian sheep are probably the largest in the world, with the largest bodies and the largest skins, with proportionally the least amount of wool to the size of the body. The skins are dewooled at Punta Arena, and the skins are sent over in the pickled state. The same remark applies when you come to the Argentine as far as sheepskins are concerned. We import them, and when I am speaking of Argentine I include Uruguay, Paraguay, and those neighbouring states, in fact, it covers the Southern American States. The Argentine ship their sheepskins either in the dried wool, that is, the dried skins with the wool on, and the bulk of those, about over 90 per cent. of them, go to the district called Mazamet, in the South of France, where they are dewooled and the best used in the glove industry in Grenoble; the bulk of the rest are shipped to America, after being dewooled, either in the pickled or in the dried state. Anthrax is constantly breaking out at Mazamet, and they only handle sheepskins. All the hides from South America are divided into three classes, what we call the salted, which may be wet-salted or dry-salted and dry hides. The wet-salting is the first stage. The dry-salting follows by drying the salted hide, or they may be dried without curing over the poles in the sun or under shade. The bulk of these hides go to Antwerp. The quantity that is imported into England is not large proportionately. That is, we are not large importers of these. In the order of imports of dry hides, generally Germany takes the larger proportion. Then Italy, then perhaps the United States. England is quite a small user. Of dried skins, especially from South America, France is probably the largest consumer of the dried skins. From our Colonies probably England is the largest consumer, but I am not aware of any anthrax ever being imported from our Colonies; say New Zealand and Australia. In salted hides Great Britain probably stands first, then the United

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States, France, and Germany. In pickled skins the United States of America would stand first and probably England second. The average weight of an oversea hide is somewhat important. We speak of hides as being light, medium, or heavy. By a heavy hide we would mean hides that would weigh 80, 90, or 100 lb. weight in the raw wet state; the light hides will weigh 25 to 40 lb.; the medium, of course, would come between, say, 50 to 70 lb. I know of no heavy hides coming from over-seas. I am not speaking of over-channel, I am speaking of over-seas, that is from such countries as the Argentine or India. As a case in point the average weight of an Indian hide, I think, is something round about 30 to 40 lb. wet, but from the Continent we get a large number of heavy hides; some of them will run up to as high as 140 lb. wet, especially some of the very fine Alpine stock from Italy and some of the Spanish hides, especially those that have been used in bull fighting. So that the hides that we have to deal with from what I call over-seas are all medium to light. That is somewhat important, as will develop later. On the Continent we get heavy hides and medium weights. The average weight of the hide probably from the Continent would be about 70 lb. average. Therefore we get dry hides from all countries except the Continent. Pickled pelts we only get from Australia, New Zealand, and South America, but we are in turn very large shippers of pickled stock abroad, produced from British sheepskins. That is the question, sir, about the provenance of the hides.

4533. I think, perhaps, before you go on to the next, we had better ask you a few questions upon this. I think you said the total number of hides which come to this country in pounds sterling was 13,000,000*l.*; did you not say that?—Nearly 13,000,000*l.*

4534. Is that from over-channel and over-seas together?—That is the total imports.

4535. The total imports from all over the world into this country?—Yes, raw, either wet-salted or dried.

4536. You have told us about the different articles that are used for these hides; you have spoken about the salted hides; the sulphate of sodium, I think you said, and formalin?—Yes.

4537. Well, all these articles are used, I presume, for the preservation of the hides, are they not?—Formalin is not used at all. Salt comes first, and a very long way first, and the sulphate of soda is only just coming in.

4538. Yes, but those two now which you have mentioned are used for the preservation of hides and nothing else?—Yes, and nothing else.

4539. Then, about the earth-paste; is that a preservative, too?—Because it contains sulphate of soda. The idea of preserving a hide means that you apply a material like salt or a similar material that will dehydrate, remove the water or moisture from the hide. If you remove the moisture putrefaction will not ensue. It has been truly said by Professor Dantec of Paris that life is an "aquatic phenomena," without water we cannot live, and if we remove the water from the hide we practically produce an antiseptic condition. If you dry it, of course, you produce a perfect antiseptic condition. If you remove the moisture, by means of salting or sulphate of soda, then you prevent putrefaction. That is the whole object.

4540. They are not disinfectants?—They are not disinfectants; there is no intention to disinfect; I would not like to say they are not disinfectants.

4541. No, that is what I am coming to presently, but the hides are treated at present in this way purely for the preservation of the hides?—That is the object of it.

4542. Then, I think you said as regards India, that a great many of these hides are put out for some long time in the sun?—Yes.

4543. That is also for drying, I suppose?—That is only to dry them.

4544. But we have heard in evidence that if an article is put out in the sun in that way that it acts as a disinfectant, too?—It will not in the case of anthrax. I was going to deal later with the question of disinfecting; the effect of sun and so on in the last part dealing with disinfection. It will not disinfect in dealing with anthrax.

4545. All the evidence you have given up to the present is to show that these different articles are placed in these hides for the sake of preserving them from putrefaction?—That is all.

4546. (*Sir Bowen Bowen-Jones.*) You are going to deal with disinfection in the killing of germs last?—Last, yes.

4547. I will only ask you one question on that point which you have mentioned. Does arsenic kill the germ of anthrax, too?—No; it will not kill the anthrax spores, and I do not think you need worry about the bacilli; I will deal with it later. I would rather deal with it then than answer an off-hand question.

4548. Does this sulphuric acid and salt mixture destroy the tissue or any of the valuable parts of the hide?—One would not use the mixture on a hide which is intended for sole leather for the soles of boots, for the simple reason that all inorganic acids, sulphuric, hydrochloric, and so on, are irremovable from the hide substance except by chemical means, and unless it is removed you will get in conjunction with the chloride of sodium, soft leather, and that is very undesirable, as we all know, for the sole of a boot.

4549. But still it is used, you say?—Not on hides.

4550. On sheep skins?—On sheep skins.

4551. Then, has it not the same injurious effect on sheepskins?—But sheepskins are required very flexible for totally different purposes. For instance, take book-binding leathers. Sheepskins enter into the light leather industry, and the light leather industry practically is represented by flexible leathers; therefore, the process, so far as flexibility is concerned, conduces to flexibility, but whether it is a satisfactory process I will deal with later, because it is not a sterilising agent in the sense that other processes are.

4552. Thank you; it struck me as being very destructive where used?—It is destructive, and destructive of tissue, but all acids are more or less according to concentration.

4553. (*Sir Harry Verney, M.P.*) I have only one question in regard to the importation of hides amounting to nearly 13,000,000*l.* You have told us that the large proportion were salted hides; then are the rest fresh hides, without anything being done to them at all?—No, we import no fresh hides.

4554. How are the figures roughly? You said the large proportion are salted hides. Do you mean five-sixths or that sort of thing?—I could not tell you. I simply got the figures this morning from Whitaker. I got the figure about 13,000,000*l.*

4555. And what is the rest?—I know, from looking up the figures some time ago of what we import, that the bulk are what we call wet-salted hides; the rest would be dried hides.

4556. No fresh hides?—No fresh hides at all, if you mean by that green hides; no green hides at all.

4557. (*Mr. Bathurst, M.P.*) I think I understood you to say that formaldehyde is totally unsuitable for the preservation of hides?—It is not unsuitable for the preservation of hides; it will preserve hides splendidly, but it will ruin them for all industrial purposes. I mean to say—I do not want to quarrel with the word "preservation," I am dealing with it from the industrial side. It will preserve them absolutely, but it will ruin them for industrial purposes.

4558. I am glad you made that correction, because I took down your words?—Yes.

4559. May I ask you, it would ruin them?—It will convert them into a kind of leather. If you take a piece of raw hide and put it into very weak formaldehyde, it will come out very much like a cake of glue, hardened glue, quite dry and hard. In fact, it is the basis of a patent for making buff leather for the Army, and nearly all the buff leather which was used during the South African War was made by the formaldehyde patent. It was found to be the property which is developed in the cod-liver oil during the process of making chamois leather.

4560. It has a softening effect?—It has a tightening effect first of all, then a gunning up effect, and the softening effect is subsequently produced in the manufacture by neutralising the formaldehyde with soda and then dressing with soapy water; we call it fat liquor.

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4562. I quite see what you are going to tell us, although you have not told us yet, that formaldehyde, although in a sense a preservative of hides, would not be a suitable substance to use as a disinfectant as against anthrax?—I am going to deal with that later.

4563. The washing of hides in Thuringen and Bavaria and Northern Italy is sufficient to remove blood from the hide?—It removes the bulk of the blood.

4564. The bulk of the blood?—The bulk of the blood, and also the dung and other adhering dirt on the hide.

4565. But it does not remove the whole of the blood?—It will not remove the blood from the capillaries. That would probably be partially coagulated.

4566. There would be sufficient of the flesh on the hide to contain as a rule the capillaries?—The capillaries would run right up to the hair roots; you would get some quite substantial blood vessels in the fleshy side of the hide, so substantial that you could put a pencil through them. I have them here (*exhibiting specimens in bottle*).

4567. I take it that you hold that the germs of anthrax are mainly retained in the blood vessels?—I would like to deal with that later under anthrax. It is a very big question, the anthrax question, but I am going to handle the question right through from the beginning, the question of anthrax infected hides and skins.

4568. You are going to tell us about effective means of removing blood from the hides?—Yes, and sterilising.

4569. You tell us that Glauber salts are beginning to be used instead of salt?—Instead of salt, yes.

4570. As a preservative?—Yes.

4571. Did you say that Glauber salts are as cheap and inexpensive?—I say it is a very cheap product, it is quite as cheap as salt. if you take into consideration that you want 25 per cent. of salt to the weight of hide, whereas you will only want 10 to 12 per cent. of Glauber salts.

4572. The effective principle contained in the Glauber salts would, in fact, be cheaper than that contained in salt?—It is in favour of the hide seller as against the buyer because he is selling you water.

4573. Oh, I see?—While the salt withdraws water and drains away, the Glauber salt retains the water which you buy at so much a pound. The tanners are kicking about it I admit, but I am only here to speak of it as being quite an effective cure for hides and skins.

4574. In fact the dehydration is not so great when you use Glauber salts?—The dehydration is as great in the hide fibre, but the Glauber salts have the power of taking up to itself the water of crystallisation. For instance, if you use Epsom salts, which have been used for falsifying the weight of leather; the Americans have been particularly keen on it and using glucose. Well, glucose is simply the solidifying material, but every pound of Epsom salts that they put in the leather will hold 7 lb. weight of water, so that you are buying 7 lb. odd of water at the price of leather.

4575. There is just another question I wanted to ask you in regard to salt: Salt is not in your opinion a disinfectant?—No. Although some little attempt has been made on the Continent, and I perhaps ought to have touched upon that. That all salt on the Continent is denaturised in order to prevent its use for domestic consumption. All salt pays a tax on the Continent, and the methods of denaturising are a source of very considerable trouble to the Continental tanners. For instance, they use petroleum. Well, no one would care about eating salt that had got petroleum on it. But the effect is that all the granules of salt get covered with petroleum and it ceases to dehydrate. Then, alum has been used, but alum tans the pelt; tans it so that when it comes to the subsequent operations in the tannery the hair does not come off easily. They use a number of these denaturising agents. Without going through the whole string of them, the Italian Minister of Finance ordered a Commission to be appointed to investigate this question, and the result of the prolonged investigation on practical tests of hides was to recommend 0.017 of bichromate of potash, 1 per cent. of naphthalene,

and 10 per cent. of Glauber salts, with the option of adding 5 per cent. of borax.

4576. But what I want to get at is this: Salt is used on the Continent in the process of manufacture of certain articles that are imported here to be used as food?—Used as food, you mean.

4577. I particularly refer to cheese and butter?—That salt is not denaturised.

4578. That is not denaturised, of course?—No.

4579. Is salt so used in your opinion, although admittedly a preservative, in any sense a disinfectant; has it an antiseptic effect?—It has an antiseptic effect.

4580. But it would not have the effect, in your opinion, of killing the germs either of anthrax or foot-and-mouth disease?—Well, may I just give you Pench's experiments in that very direction?

4581. You must not lead us too far, I think?—Oh, it is a very direct answer to your question, and it is the only one I have to rely upon, and it is rather good evidence. He took a ham from a pig that had died of anthrax. He cut a slice off that, squeezed the meat juice out and inoculated various animals, guinea-pigs, mice, and rabbits; they died of anthrax. With the balance of the meat he salted it exactly as you would a ham in the salting house, covered it with salt. Every two weeks he tested the meat-juice upon animals. At the end of three or four weeks the animals only sickened, but eventually recovered. At the end of the sixth week, although he experimented repeatedly upon a number of animals, they remained healthy and no deaths from anthrax took place.

4582. What do you deduce from that?—I deduce from this, that, while salt is present as an antiseptic, the organisms of putrefaction are still at work, and they are always fatal to the bacilli of anthrax. I am speaking of the bacilli as the vegetative or living form. Pench probably carried his experiment out so quickly that sporulation of anthrax would not take place on the surface; it can only take place on the surface, that is, the formation of spores in contact with free oxygen, so that he probably covered it with salt within a few minutes of taking his first slice, and, therefore, sporulation had not taken place, and so long as he kept the air away from the surface by covering it, or bedding it in salt, no spores would be formed. If you dry the bacilli you kill them. If you salt them well they may thrive, but it is very doubtful how long they will live in face of the constant effect of putrefaction which is going on. It may be incipient, it may be very small, present it is and absolutely necessary to make tender meat.

4583. I am afraid I did not quite understand you; I am afraid it is my own lack of knowledge, but we understand that putrefaction has the effect of killing, not merely anthrax germs, but also foot-and-mouth disease germs?—Yes.

4584. The process of salting, as I understand from you, checks the process of putrefaction?—Checks it, yes.

4585. But it is in the presence of putrefaction that these germs are unable to exist. Therefore, following logically I should have thought that if you check putrefaction, so far from checking the development of the disease, you would produce conditions under which it would live?—It takes at least seven to ten days for the salt to penetrate in order to check putrefaction in a hide. Arrest putrefaction you do not. I wish we did. By arrest, I mean the absolute stoppage. To check, is simply to put a brake on, and that brake every day gets stronger; but it takes at least a week to ten days to put sufficient check on. Those hides would be the better preserved the longer you leave them. After a fortnight or three weeks they lose weight, and are not usually offered for sale until they have matured in salt for 30 days.

4586. I do not want to be captious, but taking your illustration of the ham, if I understood you aright, when the salting was in its initial stages, the ham could be fed to a sound animal and produce anthrax in it?—Yes.

4587. But when the salting had continued for some days, if part of the ham was fed to a sound animal, it would not produce anthrax?—No; it would produce sickness then.

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[Continued.]

4588. It would not produce anthrax, although putrefaction had in fact been prevented to a greater extent than at the outset?—Well, you must realise that the anthrax also produces other things, poisons which they give off. Excretas and sickness follows from those excretas. They probably may be enzymes, which in turn might produce sickness. They may produce a typical anthrax without producing actual anthrax. You may get a peculiar growth, but you do not get fatal anthrax.

4589. I did not want to go too deeply into that, but I was doubtful really as to the bearing of your particular illustration upon the point which I put to you; but, as a matter of fact, you do hold the view that the salting has the effect of checking the putrefaction?—Yes.

4590. And, therefore, acts in a sense as a preservative, but by checking the putrefaction it would not have a disinfectant effect as regards the germs of the two diseases that we have been discussing?—It would; but you have got to realise with the lapse of time between one, ten, fourteen, and thirty days the putrefactive organisms are rampant in the beginning, and they are continually destroying; during the latter portion of the time they are simply hunting out and destroying.

4591. I quite understand what you say. May I put my plain case. Would the salting of butter or the curd in the process of cheese-making—both of which are subsequently imported into this country—in your opinion, be operative to kill the germs of either foot-and-mouth disease or anthrax?—Foot-and-mouth disease, I should say so, but anthrax you never get in any of these materials so far as I can learn.

4592. In such cases as regards foot-and-mouth disease it probably would act as a disinfectant?—It does, in my opinion, with all these delicate organisms.

4593. (*Major Dunne.*) Supposing an animal has had foot-and-mouth disease and is slaughtered, and that hide is afterwards treated in the way which you have described to us, would that hide or skin show any defect in itself; would there be any trace of the fact that an animal had had this disease shown in the hide?—Only that it would be thinner; it would lack the substance of a healthy animal. The part of the animal that is affected very rapidly from disease, that is, particularly any fever, is the substance of the hide or skin.

4594. That is the only way in which it would be shown?—That is the only way.

4595. So that a hide which was affected in this way would not be rejected by an importer or a purchaser?—No.

4596. In no case?—It would only go in as a lighter weight.

4597. (*Mr. Nunneley.*) Following up what Mr. Bathurst said last, do you consider that butter made in France, or milk drawn from cows actually suffering from foot-and-mouth disease, would be innocuous by the time it reached England?—I should not like to answer that question; I have never experimented with it.

4598. We know from cases which have been reported that butter has been actually made in France, and probably elsewhere, from milk taken from cows suffering from foot-and-mouth disease?—Yes.

4599. Would that not be dangerous?—I would rather leave the answering of that question to those who, I understand, are going out to experiment in India on the problem, which is rather a knotty problem to answer, as to how long life could be sustained in butter.

4600. I do not think the salting would be anything like sufficient to kill the disease; the salting that is used in butter?—Well, you have got to realise this, sir, that when you put salt in water, what you taste in salt water is not the salt, it is there as chlorine and soda. Now, we cannot say whether the soda combines with the fat and makes a sort of soap, and the chlorine goes to the organism and kills it, or exactly what happens. We used to think that when we put salt into water it remained there as pure salt, but we know now that it dries up, and by drying up they unite. They still play their part. That is a question I would not like to answer.

4601. Then, to turn to another point, I believe we import a certain quantity of the skins of small animals

such as hares and rabbits?—A very large quantity from Australia.

4602. Are they included in the total of 13,000,000?—No, I think they are not.

4603. And you have not included them in any of these processes you have been speaking of?—No.

4604. Do you know, as matter of fact, whether they are treated in that way, or do they come green?—They are all dried; they are never used for wet purposes.

4605. (*Mr. Field, M.P.*) I understand you to say, with regard to Russian hides, that we could so preserve them as to take away the blood from the inside and the dirt from the outside?—Yes.

4606. I understood you to say that Glauber salts was better than the common salt?—I would not like to say it was better. There are two standpoints. The one is the man who sells, and the other is the man who buys. For the man who sells Glauber salts it is better, for the man who buys, probably salt.

4607. Either salt I take it from you is, more or less of a disinfectant?—I should use the term antiseptic.

4608. I happen to have something to do with that business myself, or had at least. As matter of fact, when you salt hides you can keep them for nearly any length of time?—Yes, providing you have carried the stage of moisture to the stage of dryness.

4609. If they are properly sorted and properly handled you can keep them for almost an unlimited length of time?—You can keep them for years.

4610. You will have to get them turned and looked after; you cannot let them get rotten?—Yes.

4611. Is it your opinion that under those conditions we will get anything else but an antiseptic and a preservative?—It is both an antiseptic and a preservative.

4612. And given a hide or an article, butter, or anything else in which salt is used and contained for a certain length of time, say beyond 10 or 12 days, is it your opinion that that article or commodity could be a medium of infection?—Of what disease?

4613. Of foot-and-mouth disease, say. I know with anthrax it is different?—Well, I should not like to say. I do not know how long foot-and-mouth disease is carried.

4614. That brings us to a point that they want to find out, how long the disease lives or can be carried by infection?—Which ought to be a simple thing to prove, if we were permitted to prove it.

4615. There seems to be a considerable difficulty in getting it proved. Up to the present apparently that is one of the things they cannot prove. With regard to these hides coming from India and other places, is it your opinion that dried hides are practically disinfected by the process?—Against what disease?

4616. Against foot-and-mouth disease say?—Against foot-and-mouth disease. I should say so.

4617. And partially against anthrax?—Not at all.

4618. Not at all?—They are the conveyers of anthrax.

4619. On account of the spores lasting longer?—Yes.

4620. But so far as foot-and-mouth disease is concerned, you believe that the dried hides cannot convey the disease?—I should say, not from any experience, but purely from observation of what has happened in the case of foot-and-mouth disease, that drying is fatal to the continuance of life.

4621. Only just one other question which I think nobody else has touched on. You have had considerable experience obviously from the evidence you gave and know all about this question; you are a perfect master of it; have you any idea in your own mind as to how a project could be carried out for disinfecting hides?—Yes.

4622. Are you coming to that?—I am coming to that as my third point.

4623. (*Chairman.*) Now, we will go on to your next point. The next point is the disinfection, is it not?—Before coming to that, we have to deal with the collection, baling, shipping, stowage, available supplies and values of hides in the different countries. I would like just to put in a return I have obtained, as there has been some difficulty in ascertaining exactly the exports from the Argentine and the various materials that are

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likely to bring in contagion of any sort into this country, that is hides, sheepskins, horns, and bones. I do not know whether the Committee have the particulars of the exports from the Argentine.

4624. Well, I think I have got it here. The Secretary has just given it to me. I think this is it; the imports into this country?—I am not referring to the imports; we can get the imports into this country. I refer to Argentine exports to all countries.

4625. You are talking of the exports from the different countries?—The exports from the Argentine. I do not know whether I need read it, but I can put the letter in. I wrote to the Minister of the Argentine and he very kindly sent the information; I will put it in before I have done. I shall want to come back to that. From another standpoint which is of interest to the Committee I just wish to touch upon the position of the hide and skin trade throughout the world at the present time. It has its bearing upon the question of supplies; I will touch very briefly upon it. England, together with the continent of America, depends very much upon overseas supplies to keep themselves going. In 1880 the world, that is dealing with practically the white countries of the world, had 192,000,000 head of cattle, in 1908 we had increased to 269,000,000; sheep in 1880 452,000,000, in 1908 451,000,000; a decrease you see there.

4626. (*Mr. Field, M.P.*) How do you get at these figures?—They are given by Mr. Hooker, of the Board of Trade. The population of those countries in 1880 was 411,000,000, in 1908 it was 572,000,000. I shall be very pleased to send the Committee that in detail if they wish it. But the point rather there is this, that cattle have not kept pace with the increased wealth and population. It will be interesting to those who are interested in cattle trading in this country. Sheep have actually decreased in the same time; but then we must bear in mind that sheep, which includes the enumeration in Australia, are a fluctuating quantity. But, on the other hand, you have practically the extermination of sheep in Europe—I leave the British Isles out—practically the extermination of sheep in Europe; I leave the British Isles and Russia out of that question.

4627. The extermination?—Of sheep, yes.

4628. (*Mr. Nunneley.*) Do you mean they are dying out in other Continental countries?—I mean this, that in Austria I think the decrease in 20 years is something like 60 per cent. In France it is something like 45 per cent. I will not bind myself to these figures, but they are fairly approximate; and in Germany, 19,000,000 in 1883, 7,000,000 in 1908, they are down close to the Austrian, which is some 50 or 60 per cent.; in Belgium they are so small that they no longer enumerate them. That is due to the industrial development, and the land yielding more in crops than it will feeding sheep.

4629. (*Mr. Field, M.P.*) They do not eat mutton on the Continent?—They do not eat much mutton on the Continent. The mutton taste is very largely confined to the Anglo-Saxons. Although in these figures I have given you those countries that are enumerated which have piled up the total are Australia, New Zealand, and the Argentine. India, I may say, and the East, and Africa, are excluded from all these figures.

4630. These figures which you have given us are the Continent, I take it, bar Russia?—The Russian figures are in; countries from which we can get accurate enumerations. I will send you the complete list, sir.

4631. (*Mr. Bathurst, M.P.*) Sixty per cent. reduction over what period?—About 30 years.

4632. A generation?—Yes; I can give you the figures. I did not expect to have to give them; it occurred to me to do so. That is supported by the increase in hide values. We only need take the question of hides. If we go back to 1880 you will find that we were buying hides. Raw hides, the average price at about 2d. per lb.; these figures were given me by a leading authority in Liverpool, who had made a special study of it, and they are the average figures of an average market in England: In 1894 the average price was 2½d. per lb.; in 1895, 3½d.; in 1896, 4½d.; in 1901, 4½d.; in 1905, 4½d.; in 1906, 5d.; in 1910, 6½d.; and last year they touched an average of 6½d. That is in that period there is an advance of 226 per cent. in

what is after all only a by-product. I know of no industry that has had such an absolutely steady advance as that of the hide industry, and it will go on.

4633. (*Mr. Nunneley.*) Do you include sheepskins in that?—I have not dealt with sheepskins; I have simply dealt with hide values. Sheepskins are an extremely fluctuating commodity.

4634. (*Mr. Field, M.P.*) It depends on the price of wool very much?—Yes. This question is of interest to the Committee in considering the question of cure. We will take the case of India. You will see here that England and the Continent have benefited by a 226 per cent. advance over a given period, but we will take a very much shorter period for India. We will take the years 1905 and 1910. The average price of the hides shipped from India in 1905 was 6s. 6d. Five years later it was 6s. 8d.

4635. That is the price of a hide from India?—The average price. That takes in all the very poor ones; everything.

4636. A very low price?—Yes, 6s. 8d. per hide, because all the diseased and small immature skins are enumerated, but as the method of enumeration is the same in all years the conditions are comparative. In 1905 India exported hides of the average dry weight of 9-16 lb. per hide, the export average value being 7-8d. per lb. In 1910 under the same method the weight per hide was 9-3 lb., and the export value 8-7d. per lb. Thus India only received an increased value of 0-9 pence per lb., whereas had she cured her hides on lines prevailing in Europe she would have increased the value at least double the amount. That is, instead of exporting 3,489,196 lb. she would have exported 5,774,699 lb., which in all probability would have commanded an enhanced value according to the condition of cure and hide quality. It is the unfortunate methods adopted in curing hides in India which we should find fault with. Those conditions are productive of financial loss to India and serious danger to the public health of the importing countries. The same remark applies to the Argentine which, of course, does not interest us in the same way, but the Argentine loss is very considerably more. On this question the other points that I want to raise—are that they did not come under my notice so much except that we do get them attached to hides—are the hoofs and the horns. They are a source of contagion, and I find that the Argentine imported into England quite a considerable quantity of hoofs and horns and bones. They also export what is known as glue-stock. That possibly might escape your notice. It is the trimmings of the hides which have been dried and are boiled down for glue. The bulk of this, I believe, goes to America, the United States. The Glue Trust of the United States have been in correspondence with myself presumably regarding outbreaks of anthrax among their workpeople. It is just as well that I should call the Committee's attention to that.

4637. The Trust in glue, you mean, in America?—Yes.

4638. They stick at nothing?—Now, the Argentine exported practically 2,500,000l. worth of bones last year abroad, of which apparently last year we imported 24,000l.; they would not be disinfected. May I hand this to you, sir?

ARGENTINE EXPORTS TO ALL COUNTRIES, 1910.

	Tons.	£
Salted cowhides - - - -	61,029	3,390,674
Dry cowhides - - - -	29,844	2,751,605
Dry and salted horsehides - - -	2,087	100,283
Dry sheepskins - - - -	29,384	1,586,732
Dry goatskins - - - -	2,217	200,344
Horns - - - -	3,200	48,642
Bones - - - -	29,489	289,729

OF THE FOREGOING GREAT BRITAIN IMPORTED, 1910:

	£
Hides - - - -	447,993
Skins - - - -	230,000
Horns and hoofs - - - -	8,064
Bones - - - -	24,104

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[Continued.]

Now, I would like just to touch upon the method of the collection of hides as I have seen it. It is generally assumed that hides exported from a port may be considered as collected within a given radius of that port. Take, for instance, the Port of Shanghai, or Tientsin; one would naturally suppose that the Tientsin hides would be all North China hides; they may come from far-off Kamtchatka or in the north of Siberia. They may also come from the interior of Siberia. The same remark applies to those that are collected at Shanghai; they are not collected in the province in which Shanghai is situated. That is important because it only shows how infection may come through a port. I have seen hides which have come through from Tibet and Mongolia across the Gobi Desert right through to Shanghai, and yet they may have passed Hankow and other ports on the way, from which they might just as well have been shipped, but the man thought he could probably do the Scotchman or whoever he might be—they are generally Scotchmen who deal with these hides, or Germans—at the Port of Shanghai better than he could do at Hankow, so he brought them along. The question of the thousand or so miles makes no difference to him. It is important that we should consider that, that hides are collected from different parts, and there is no continuity of one man bringing his hides to the same port every time. He may go hundreds of miles out of his way in order to get a very slight extra price. When the hides are brought to the port, they may have passed through several collectors' hands before the final collector offers them to the European who buys them. The buyers and sellers right along have gambled with those hides. They have been more or less commercial value for one thing or another right the way through. Eventually the man who sells them to the European gets the best price he can, and really does not know very much about their value, except what they cost him. The European is quite unable to estimate their value because he cannot detect what faults they possess. They are all dried up, being in a crinkled condition. They may be covered with dirt and they have certainly been travel-stained badly. In China he will appoint a Chinaman to bargain for the hides. Still, then it is a case of simply diamond cut diamond and it depends upon the wit of one man against the other what the price is to be, so it is merely a gamble. That element of gamble pervades the whole transaction right the way through to the tanner in England. The tanner simply knows that the last lot turned out good under this mark; this lot may turn out all right. He does not know until he gets them in his tannery whether he will get 100 or 20 sound hides; 80 hides may waste away and dissolve down the drain. When these hides arrive, they all drift to one section as a rule, in these Treaty Ports. That is where the hidemen usually congregate and where the go-downs are. Then, they are sorted by the men who are appointed to that duty, chiefly according to the weight and the size and such conditions that they may possess which will enable them to be sold to their advantage in the European market for which they are destined. They are taken then and hydraulic pressed in bales of convenient size for shipment. The whole place is simply stinking of hides and dust. These places are used for pressing food-stuffs, pressing anything that comes along. There is no attempt made—I have never seen any attempt in any of the anthrax countries or anywhere where these operations are carried on—to cleanse these presses down or in any way sterilise them.

4639. Are you talking now of these Treaty Ports?—I am speaking of the Treaty Ports or any of our Indian ports anywhere where dealing of that sort is going on.

4640. (Major Dunne.) Are you speaking from your own personal experience?—I am speaking from my own personal experience. In the smaller ports, as a rule, the baling is done by exactly the same system that it is done in Siberia where a man will get his boards across, and he will pull his ropes with a long lever just like you get a running noose on a rope and tie it round a pulley, use the pulley as a lever, and then lock it, and so make a press, or he may do it by weights and then pull them up, but the same appliances would be used for baling

the next thing whatever it may be; it may be a suit of clothes; it would be used for that purpose. But I have seen food-stuffs baled with the same presses that are used for hides.

4641. (Chairman.) Have you seen that on the Continent?—No, not on the Continent of Europe; Antwerp and Hamburg re-export dry hides to us.

4642. There are not?—All the Continental hides are folded up in small wet bales and tied round with ropes. Then you come to the question of stowage on board ship. I wrote to a number of shipping companies in June of 1910, as I was desirous of ascertaining how hides and skins were carried on board ship, authoritatively, although I had seen the thing personally in travelling. The (A) Line state that bales of dried skins and hides are carried in the ordinary holds of this company's steamers, but care is taken not to put goods susceptible to taint in the same hold. The (B) Steamship Company, in writing of the stowage of hides from North Brazil, say, dried hides are stowed in the 'tween-decks and wet hides in the lower holds. They are stowed as far as possible from other cargo. The (C) Steamship Company state: "With regard to wet " salted hides and skins, these are never carried in " the ballast holds, which are simply used for water " ballast and not for cargo." I have heard of a cargo of hides, which were shipped from Liverpool to New York, that were carried as ballast in the ballast holds.

4643. (Mr. Field, M.P.) That was an exception; it was not on that Line?—No, you are quite right, it was not on that Line: "The wet salted hides and skins are " usually carried at the bottom of the hold or in the " tween decks, and kept clear of other cargo that might " be damaged by them." The (D) Line runs up to Kurrachee, and practically handles nothing but dried hides: They say: "Dried hides and skins are not stowed " in any separate hold; they are usually stowed quite " clear of any ordinary cargo. We get no wet hides " from India." So that confirms my statement that all the Indian hides are dried hides. That is a representative group from different parts of the world, from Brazil, from the East, and from Russia. That brings me to the point now that I have dealt with, the collection and the carriage of these goods to the port.

4644. (Chairman.) It is a most interesting statement you have made, but it is rather important this one thing you have said particularly about these skins being pressed in the Treaty Ports?—Yes.

4645. And then, the other food-stuffs may be put in the same place without any disinfection at all, after these hides have been in?—Yes. I consider that whether the pressing is done or not, the food-stuffs I have seen in the same buildings in the presence of the same dust flying about—whether the food-stuff was put into presses or not the infection has already taken place.

4646. You have seen that with your own eyes?—I have seen that with my own eyes.

4647. And then, as regards these ships, the different information you have got from the companies, they have no regular rule as regards the conveyance of these hides? Some carry them 'tween-decks, some in the holds. There is no general rule as to where they carry these hides?—There is no general rule. The only rule that seems to rule is that they charge rather more than twice the rate for dry hides over wet hides. That is the only rule, I think.

4648. As far as you know, there is no disinfection of any kind, is there, takes place in the holds of these ships?—Not so far as I know. If it did it would not help us at all in your Committee. It is no use disinfecting the hold where you are carrying the disease in.

4649. (Mr. Field, M.P.) You say the number of inhabitants of men and women as compared with the number of cattle, the population, has increased in a grater ratio within a certain time than the number of cattle?—I should say with the demand of the population.

4650. Well, of course, one thing is consequential on the other?—Partially.

4651. That is really the meaning why the hides are so dear?—Yes.

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4652. They are three times the price they were?—Yes.

4653. The only other question I want to ask is, where did you see the hides and skins stored; where other goods were promiscuously placed afterwards?—In China.

4654. Anywhere else?—No. I have seen them in China, taking the whole of that Eastern district.

4655. Have you any recommendation to give to this Committee with respect to the disinfection of hides and skins, because that is your particular line, either in the vessels or before they are put into the vessels or the holds of the vessels afterwards?—I propose to deal with that next.

4656. (*Major Dunne.*) The only question I wish to ask you is with regard to what you were talking about, namely, these food-stuffs, which were being pressed in the way that you have told us. What are these food-stuffs?—What I saw were hay or like materials which were going down the coast.

4657. Hay?—Yes.

4658. Not feeding-stuffs which were destined for our own country?—That is true, but, on the other hand, soya beans were present which were being shipped to England in bags.

4659. These would hardly be compressed, would they?—No, but I said they were in the same warehouse.

4660. Then, really the food-stuffs that you saw being pressed in this way, as far as you know, would any of them come to England or not?—I should say not. I do not think we import any of this peculiar stuff from that country; it was rather going down the coast. This, that I have in my mind, was, I believe, destined for Hong Kong, probably for the troops there or for native cattle. But the soya bean was present in the same warehouse, and I saw it was covered with dust. The only way dust could arise there was from the ordinary dust out of the yards and from the hides that were present. There were probably about 100,000 hides in the place.

4661. Then, you think this might be a possible source of infection, those things all being thrown together on the quay?—I do.

4662. (*Mr. Morrison.*) Have you had any experience in the way in which the Bombay cotton cake is brought to this country?—No, except that I have seen it on the steamers and shipped contiguous to the hides.

4663. When you saw it, did you think there was danger of infection from the hides mixing with the cake at all?—If the hides were diseased with anthrax, there would certainly be a danger of contagion.

4664. I suppose, as a general statement, you are strongly of opinion that there is great danger of infection, supposing the hides are infected before the goods are put on the ship, also at the quay, in the sheds, and in the presses, and so on?—There is danger from infection anterior to the port of export, but it is in a lesser degree to that which takes place on board ship.

4665. That is from your own personal observation?—Yes.

4666. In China and India?—Yes.

4667. No other foreign country?—Those are the countries which send us most of the anthrax, and Russia, of course.

4668. But you have had considerable experience of those countries?—Well, I have been travelling over Russia for 20 years, living there for three or four months in the year.

4669. So that you would have an extensive experience of what happens at the putting of goods on board ship?—I have taken every opportunity of ascertaining what exactly happens during my visits to the various ports.

4670. I suppose you think that on board the ship there is even greater danger from contact?—I think so; although contact anterior to the port of export, and also at the port of export, should not be neglected.

4671. That is also on the strength of a considerable experience of what you have seen on board ships?—Yes.

4672. From your own personal experience?—Personal experience, yes.

4673. You mentioned that there was no disinfection of these hides. Well, just this one question. Many of these hides are re-exported to America; they are transhipped?—I propose to deal with the American methods of disinfection and explain how they came about.

4674. (*Mr. Nunneley.*) As a matter of fact, do you know that in the process of baling, pressing, and so on, is there dust expelled from these hides?—Yes.

4675. There would be?—Yes.

4676. And the other articles were close to?—Even if they were in another building. These buildings are all open, as a rule, with high fan-lights like these in this room, no panes of glass in them, but all open; the draught is coming through and the dust is carried from one warehouse into another. Even supposing that these warehouses were confined to skins, that next one into which the apertures already open, or was not blocked up, any dust would be carried over.

4677. But, as a matter of fact, the warehouses are not confined, one for skins, one for other things?—Some are not, some are.

4678. (*Mr. Bathurst, M.P.*) With regard to this Bombay cake that my colleague asked you about. You say you have seen it contiguous to hides?—I do not speak of Bombay cake or any other cake; I speak only of the shipment of food-stuffs generally. I have not familiarised myself with the cake industry or how far it is carried on in the East. I am only speaking of this that I have seen: the dry hides are carried in the same holds in steamers, contiguous to cargo that was evidently destined eventually in some form or other as food-stuffs.

4679. But food-stuffs coming from India?—Well, I could not say whether these food-stuffs did not come from further ports than India. The steamer at Bombay, for example, may have collected cargo that is transhipped from the Farther East.

4680. But when you say contiguous, what do you mean; touching?—Well, it is so close, you cannot pass between the cargoes. They are built up as they are stowed in the ship; they are simply packed tight in the 'tween decks; there may be a division line, simply a thin partition of boards, but these boards did not fit like the top of this table.

4681. You have never actually seen food-stuff and hides touching each other on board ship?—Oh, yes. I have seen hides buried in grain.

4682. Recently; during the last few years?—I would not like to say. I have investigated the thing for nearly 30 years.

4683. (*Mr. Field, M.P.*) Were those dried hides; of course, they were not wet hides?—Dried hides, certainly.

4684. (*Mr. Bathurst, M.P.*) You have spoken of the baling of hay just now in answer to Major Dunne; have you reason to believe that any of that hay comes to this country?—No, I do not think it does.

4685. And there is no other cargo that you have seen baled that does come to this country?—Yes, there is plenty of other stuff that comes.

4686. I mean that is used for feeding stock?—Not for feeding stock. I have seen horsehair baled, and bristles, and so on.

4687. As regards Soya beans in that way warehoused. Had you reason to believe that they come to this country?—They come in very large quantities to this country.

4688. One other word about bone. You said that bone found to be exported from these parts would not be disinfected. That is raw bone, I suppose, is it?—That is the dried bone.

4689. It has not been treated with either sulphuric or hydrochloric acid?—Not for this country. It is for some countries.

4690. But not when sent to this country?—Not when sent to this country. We have no provision for it; at any rate, I have never seen bones destined for this country treated. I have seen the New Zealand authorities treating them.

4691. Do you happen to know whether any of that raw bone goes upon the land in this country?—I do.

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4692. It goes as raw bone upon the land?—I could not say whether it has been treated since, but I know of one case of anthrax that came under my notice which undoubtedly came from imported bone manure.

4693. From a bone manure factory?—Even if it is from a manure factory, it does not necessarily kill the spores of the anthrax.

4694. That is after treatment with sulphuric acid?—I could not say what the treatment had been at this factory, but it had evidently been a severe treatment to reduce it down to the condition in which I saw it.

4695. However, your point is that even after treatment at an artificial manure factory there would still be the danger of bones conveying anthrax to the farms?—Yes; you did not ask me the question where I saw the grain and the dry hides. You will see it almost any time in the south of Russia at the wayside stations.

4696. At the wayside stations in Russia?—In the South of Russia you will see bales and bags of corn which had been left there all green with mould.

4697. (Mr. Field, M.P.) Would the corn be in bags? Well, it is in bags, but you will find the peasants in their hunger attack them, or the bags have become rotten or rat eaten, and the result is the corn is all over the warehouse, and the whole warehouse may be seething with hides and corn. You will see that not infrequently, and that wheat is undoubtedly shipped here or to some country.

4698. From Southern Russian ports?—Yes.

4699. (Mr. Field, M.P.) There is just one question about the cotton-cake from India. Is it a fact that we get much cotton-cake from India?—I really know nothing of the Indian cotton-cake industry; I was speaking of food-stuffs.

4700. It is really a very limited quantity?—Seed comes from India—linseed; I can speak of that.

4701. (Mr. Lane-Fox, M.P.) You have told us about the state of the Treaty Ports, but what happens here in our own ports? Have you seen the same thing, hides and grain mixed?—They do not go to the same warehouse here, and as a rule our steamers keep them separate.

4702. Are they landed separate?—They are landed at different wharves.

4703. Absolutely different?—Yes.

4704. We have had rather different evidence to that?—I am speaking now of this, that you will not find your corn at the hide wharves in London here.

4705. When they leave the ship they are absolutely landed at a different wharf altogether?—Take Liverpool. A steamer going into dock there lands over the side, and hides go to one warehouse and the other to another warehouse, but at the same time the warehouse alongside the dock may receive both over the side of the ship. In London here it is done by lighterage, I understand.

4706. (Chairman.) Will you go on with the next point?—The question of the sterilisation industrially; the industrial sterilisation. I take it, if we consider the question of sterilisation of hides from the anthrax standpoint, the sterilising of anthrax also means that we shall be able to sterilise all other pathogenic germs. It has been shown that anthrax is conveyed into this country direct to human beings by means of dry hides from anthrax-infected countries. Those hides have transmitted the disease to dock labourers and wharfingers, to the carters, to the various people who have handled it right through to the tannery, and in other more indirect cases even school teachers and others have died of anthrax, or been affected with anthrax. A postman, I believe, has also died of anthrax. These are quite isolated cases. It has been found that the wife of a dock labourer working at the docks has died of anthrax. Well, it is quite evident that she got the contagion from his clothes in some shape or form, therefore we may look upon hides as the conveyor of anthrax. Anthrax does not grow on grass or on vegetables. Its home and birth is in the animal itself. Cows, in fact you may say that all the group of animals whose blood temperature varies from the nineties up to say 103 and 104 degrees, are subject to fatal anthrax. Dogs and fowls are not subject to fatal anthrax, because they have a very much higher blood temperature. Therefore the proposition of the sterilisation of anthrax

resolves itself into whether it is industrially possible to sterilise an anthrax-infected hide. That same remark applies to a skin: the question of sterilising wool. According to Dr. Eurich, the Bradford expert, he says that if the blood fleeces, that is, the bloody fleeces, were eliminated from the bales at the port of export, there would practically be no anthrax in Bradford, and as anthrax infection is mainly conveyed by hairy-wool fleeces, it therefore follows that greasy wools probably do not convey anthrax, it is only the blood adhering to the wool. The difficulty of sterilising a dry hide has been very considerable. The anthrax germs: I have in my hand a piece of dry hide, it is quite innocuous. It is Cape hide which is free from anthrax, although it is a dirty one. The hide itself is as hard as a horn. Anthrax has two states of existence. While in the blood it is in the rod form, like little threads, which are called the vegetative form, and it is classed among the fungus group. If those living rods are dried or subjected to any treatment they are very easily sterilised; but when an animal evacuates, or any of the saliva at the mouth or the nostrils, or so on, the faces passing from the animal it will carry with it these bacilli. The hide, when it is flayed, is covered with blood like this one (*showing specimen*). In that blood, while wet, which is almost entirely on the surface, the anthrax bacilli will be present. On exposure to air, free oxygen, that bacilli develops a spore in the centre of each little break in the rod. These rods are just like a knotted cane; in each section will be observed a wee little speck appearing under very high magnification, which lives at the expense of the protoplasm of that section of the rod, and when it has exhausted the whole of the protoplasm it bursts out and comes out as a mere minute speck. A seed which we call a spore, they sporulate on the surface and immediately under the surface where the free oxygen can get at the underlying part of the skin like this, the flesh that adheres. The method by which these hides are restored in the tannery, perhaps—I will go back and say that these hides, when they come on board ship, are baled, and this stuff breaks off (knocking it). Now, there is a lot of little dust on this paper. Well, that dust, even with my gentle handling of it, is very much accentuated when these bales are rolling in the ship together, and this dust is capable of flying about the room, it is so palpable. Although you may have divisions in the ship, it is quite impossible to prevent this dust from travelling about the ship during a long voyage, constantly rolling; hence it is possible, and it is very probable, that you have a cargo of say food-stuff on board a ship that is destined perhaps, not for food-stuffs, but for expressing the oil out. Just in one portion of that cargo of seed you may get an area that is infected. Although that portion may go through all the punishment in an oil mill, boiling, hydraulic pressure, and so on, it will not in any way affect the spore. These spores are capable of the most brutal treatment possible. They are very resistant. Now, in that way a small portion may get into a given cake and travel to a given part of the country, and be given to perhaps one animal, or two may eat it. The result is you get indirect infection of the animal with anthrax.

4707. (Mr. Field, M.P.) May I ask just one question? Do I understand the dust, which you say proceeds from the hide in consequence of this treatment, conveys the spore?—Conveys the spore, yes.

4708. It absolutely holds the spore in it?—Yes, in what we term a colloid body, or an albuminous mass. That such infection is due to the artificial food-stuffs is indicated from the chart which is issued by the Board of Agriculture, in the Chief Veterinary Officer's Report for 1910, in which he shows that during the two winter quarters the incidence of anthrax is at its highest. That is the period of the year when artificial feeding is carried out the most. It drops to its minimum in July and September, when there is plenty of food-stuff. That applies to England. If you were to turn to the Russian figures, as given by Dr. Legge in his Milroy Lectures, you will find that that table is just reversed. The incidence of anthrax in Russia is greatest in the July and September quarter, and lowest in the winter. Artificial feeding is not carried on there. I naturally draw the conclusion from this, that as anthrax is not indigenous

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to the British Isles, it has very great difficulty in getting a foot-hold on account of climatic conditions; but the climatic conditions of Russia, Southern Russia particularly, and Siberia, are such that it may be said to be indigenous. In fact its home is in Siberia, and, therefore, this chart can only indicate that it is very possibly due to the imported food-stuffs which are on the increase; and in proportion to the increase of food-stuffs, so is the increase in the number of deaths, as shown on this chart.

4709. Food-stuffs from Russia and India, of course? —From any infected country that we may import from. Now, before coming to the question of the sterilisation, the method adopted in all countries by the tanner in restoring a hard substance like this dried hide, the oldest method, is to put it into what they call a putrid soak or water. That is water in which hides have been before, swarming with putrefactive bacteria which will eventually soften the hide in two or three weeks. At the same time you may lose a good many hides in the process, because that is already full of putrefactive organisms in a state of suspension.

4710. (*Chairman.*) You are speaking of when it gets into the tannery now?—Into the tannery in any country. The other method is to subject it to one part per thousand of caustic soda. The other method is to treat it with a solution of sulphide of sodium. But all these operations take from two to three weeks, according to the character of the hide, whether it has been spanned out tight on the ground or whether it has been dried in slack. The spanned-out ones will take longer; they have to repeatedly drum them in great big drums and pound them to get them soft. During any of these three processes you get a very large amount of hide substance washed away, which is a dead loss to the tanner. The tanner is perfectly well aware of that, but he knows of no other or better method. The tanner wants that stuff he washes away—we call it dissolved hide substance—in the hide, because he tans for weight and sells his leather by weight, and if he can retain that in the hide it is to his advantage to do so. This question of the restoration of the dry hide to the wet-salted condition appeared to me many years ago to be the first step in the direction of the sterilisation of anthrax, and to that I turned my attention over 20 years ago. In the meantime, before I published the method which I say is not a patent—I have no interest in the matter, it is for the world to use perfectly free, I have no axe to grind in it—the Americans had already issued an Order, the United States Government, in which they stated that hides, dry hides in particular, had to be submitted to a bath of one part per 1,000 of perchloride of mercury for half an hour, or to five per cent. solution of carbolic acid, or to about six hours with burnt sulphur fumes—sulphurous acid gas. I was very much interested in these processes, because not one of these are of the slightest value. The effect of the mercuric chloride is one of tanning. Here is a piece of skin treated with mercuric chloride. It was the size of that piece you see here between these two glasses. (*Exhibiting samples.*) Well, by subjecting it to mercuric chloride, this is a strong solution, you get a piece here which you see is hard. Now that has been pure pelt, jelly pelt, we call it pelt, and with perchloride of mercury you get a hardening of the tissue. The thing would snap if I were to take it between my fingers. The effect of doing that upon a hide is that all the mercuric chloride is precipitated immediately upon the first portion of the hide, that becomes moist in the dry hide, and tans it, converts it into a kind of leather; when it is all precipitated—one part in a thousand is so very little—then the other part of the hide which may contain the anthrax spore receives no mercuric chloride for treatment. After the tanner has softened these hides he finds on the hide where the mercuric chloride has been precipitated a yellow patch of hard material which cracks on drying, and, therefore, his leather is spoiled. Then you come to five per cent. of carbolic acid. Carbolic acid will tan it in a similar way, only it produces a roughness and a corrosive effect, and it combines with the skin in such a way that it will interfere with the subsequent operation of removing the hair. The hair is removed from the hide by bacterial action very largely,

except in the case of the use of sulphide of sodium, which will dissolve the hair. It will dissolve all keratin matter such as the nails and hair are made of. The tanner who puts his hides into lime relies largely upon bacterial action. If the hides have been treated with carbolic acid the tanner cannot remove it, it is fixed there and combines with the fat in the hide. It is very difficult to remove. If you come to the question of sulphurous acid gas from burning sulphur, that simply covers the hide with a film of moist vapour, but it in no sense penetrates the hide; the hide will still come out hard and firm like this piece, whether he put it in the mercuric chloride bath for half an hour or in the carbolic acid bath for half an hour, or in the vapour bath for six hours, it will come out hard. You do not get at the underlying tissue, because it is in this fleshy state that the danger lies. I will now turn my attention to the question of softening the hide as being the preliminary to disinfection.

4711. (*Mr. Field, M.P.*) Do the American Government take all these restrictions?—They have practically ignored them, I believe; I think now they are not enforced in the same way. There has been a tremendous lot of fighting over it, and I believe they have been or are being removed because they are ineffective. I have been in considerable correspondence with American Government representatives over the question of the sterilization of hides; in fact with several Governments in connection with this matter. I said earlier this morning that the use of inorganic acids, sulphuric and hydrochloric, was fatal to making firm leather; it is also not a preservative against fungoid growths. Going back during the last 20 years, in the early portion, I felt and I knew as a chemist that the organic acids did not possess that feature, because organic acids are used in the early stages of all tanneries, but they were not at that time a commercial article on the market, except acetic acid, in the shape of vinegar. Lactic acid came on the market first, then we had formic acid, and eventually butyric acid. All these are made now synthetically. When formic acid first came in I experimented with using 5 per cent. of formic acid in water, it was then 40 per cent. strength; 40 per cent. of the whole was formic acid, and I found that in 24 hours I could soften the hide, and get it entirely soft. But it was quite evident that there was a large quantity of formic acid left in the water. I have since ascertained that it may be done equally well, now that we are getting formic acid at 90 per cent. strength, with one-fiftieth of 1 per cent. But in common practice I advocate for the purpose of softening average dry hides using about one-fifth of 1 per cent. I am dealing now with the simple question of hide softening. The first effect of softening the hide, taking this hard hide—another piece like this is as shown in this bottle (*exhibiting specimen*)—you see it is swollen up. This piece also contains mercuric chloride. You see the hide has swollen up, but it is also cleaned; it has become whitened in fact; the whole structure has been cleansed. And if you get a piece like this, which contains a large blood-vessel, you can see right into that blood-vessel, and that that blood-vessel has been absolutely cleaned out; it is as clean as any other part of the hide. The blood and filth from that is at the bottom here, that is the dirt out of that piece of skin. (*Showing specimen in another bottle*). That that process has no deleterious effect on the pelt is seen; here is a piece of pelt after the hair has been removed in the lime-yard, which you will see is practically the same substance as the formic acid softened hide; the swelling has had no injurious effect; it will swell that much in the lime-yard. Having found the means of softening, I then saw my way to what was rather an important matter, namely, what I knew before and what was known to some German scientists: with salt and perchloride of mercury, that if you use perchloride of mercury in the presence of salt, precipitation of the mercuric-chloride instantly on the wetted skin was arrested. This is an extremely important point. A double salt is formed, but then it was no use applying pure salt and mercuric chloride to dry hide, because the softening effect would be too slow. It occurred to me that the proteids of the hide which precipitate the mercuric salt would be held up by

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formic acid so that the mercuric chloride which I introduce in the formic acid bath would not be immediately precipitated. But that had to be proved, and the difficulty lay in proving so difficult a point, because one was using 1 in 5,000, or 1 in 10,000, or 1 in 20,000 of mercuric chloride, which is a mere trace. After consultation with Professor Procter, at Leeds, who in conjunction with Mr. Arnold Seymour-Jones worked out a method of determining this by a colourimetric method, which is described in this little pamphlet, and is interesting as proving the fact. In the centre of this chart we have a line of dots showing the progress of the acid over 24 hours. It is extremely gradual. We have to bear in mind that over 99 per cent. of the liquid used is cold water. If we follow the thick black line we find the mercuric chloride during the first three hours actually increases in strength in the solution, showing that the acid is holding up the proteids and carrying in the water, softening the hide, and not until the acid has done its work, and that is after 3½ hours, does the mercuric chloride drop to its original strength and start then to penetrate, and it follows it in a perfectly graceful curve down until it is practically exhausted, but the acid itself is only exhausted to the extent of 25 per cent. Here was a clear proof, repeated on various occasions and various strengths of the mercuric chloride, showing that the method penetrated quite effectively. Having satisfied oneself on that, it became necessary to prove the efficacy of the process bacteriologically and also to carry it through the tanning industry, because the latter may be a question in restraint of trade. Bacteriological work has been carried out by a number of gentlemen. The Leather Sellers' Company through Dr. Ponder of the Bacteriological Laboratory at Cambridge, took the matter up and have issued a very long report, and other scientists at home and abroad have been doing similar work, and up to the present, from all sources, I have received nothing but confirmatory results of its effect as a sterilising agent on hides, using 1 in 5,000 of mercuric chloride. In regard to its effect on leather, I may say that in the course of the process we first of all take the dry hide here, submit it to a bath of formic acid and mercury for two or three days, till satisfied the hides are soft. They are then put into salt brine, which you see it falls in substance. (*Showing specimen.*) Its next stage would be in the lime-yard, where you get it in that stage. (*Showing specimen.*) I cannot show you the tannery pits here, but I can show you the resulting leather. (*Exhibiting specimen.*) One is made in Italy by a large Italian firm, and the other is made here in England. Both of them are perfectly satisfactory products. On the other hand, work has been carried out to demonstrate to the trade, because the leather trade is a peculiarly conservative trade, in the conduct of their business. They are always alarmed at any change taking place. They, therefore, have been anxious that this matter should be tested upon a manufacturing scale, and careful analysis made of all the waters and liquors, so as to ascertain what was the loss of hide substance. That report will be read at Leeds on the 16th of this month by Dr. Gordon Parker of the Leather-sellers' Technical College, who entirely at the request of the tanning trade—I have nothing to do with it—has been carrying out this work over 12 months.

4712. (*Mr. Field, M.P.*) Independently of you?—Nothing at all to do with me; not even at my instigation.

4713. That is an independent test altogether?—Absolutely. All I know is he informed me of the results the other day, and the results are satisfactory. I can only tell you what he has told me, I can send it to you officially later on—that there are some six or eight firms in the United Kingdom at the present time which are using the process for softening their hides. They are getting a gain, I believe, of some pounds weight per hide of leather. If leather is worth 1s. 6d. per lb., and they can get only 1s. 6d. upon a hide, and the man is doing 5,000 a week, it is a substantial profit. But I understand they are getting more than that. So far as being any restraint of trade is concerned, it is being used on the Continent and in England at the present time, and in America. Butyric acid has been sold for that very purpose of softening

hides, and so has lactic acid, and so the answer to the restraint of trade is, that so far as the process is concerned, the process will gradually be accepted by the trade as a hide softener. But, we are interested in the sterilising of hides. In the sterilising of hides; my scheme is that it should be done at the port of export. I start out with the theory that, as a Nation, we have no right to knowingly import infected material. Hides being a source of infection are capable of being sterilised, that is sterilised in such a way that having accomplished the purpose, that sterilisation, will not interfere with the subsequent process through which the hides have to go. Then you come to the question of opposition to any such process if it were adopted. The opposition of the trade has been, and is steadily being removed. The opposition will come naturally from the exporter himself, who will object to any change in his business methods. It means that he would have to put down, instead of his hydraulic press, some pits for immersing the hides. He would have to import the acid and the mercuric chloride. He would probably raise the question that it is a deadly poison. I admit that mercuric chloride is a deadly poison, but it is natural that anyone using mercuric chloride will use it with caution, and the quantity that we recommend, 1 per 5,000 is absolutely non-injurious to any human being. At the International Congress of the Leather Industries at Turin last August, this question of the part of poison was taken up, and to demonstrate that it was not poisonous I drank a glass full of the formic-mercury solution before the Congress, and several gentlemen followed my example,

4714. And you are here still?—I am here still. It is absolutely non-injurious in so dilute a solution. Now, that question is the only question that remains. That is the opposition which we will get from the exporter, but it is a small matter, and in my judgment it should not weigh with us. But, on the other hand, if you suggest the putting on of these restrictions it may embarrass trade by diverting material to other countries who will accept it unsterilized, therefore, it is necessary that before these restrictions are put, overtures should be made to other countries with the view of coming to an understanding that approved methods of hide sterilization should come into operation, say, two years hence. I would give them sufficient time in which to understand the process and to get the material. I am convinced from the correspondence which has taken place that you will find Italy, the United States, and Japan, and probably France, will come readily into line. In Germany it is still being tested, and so far as they have gone they are quite satisfied, but they are a bit slower to come to a conclusion. Then there is the question of cost. Before going on to that I may say that all these experiments in Europe have been carried out with cold water. That is an important statement, because in the countries from which anthrax is exported the temperature of the water is nearer blood heat. Now, if you took a dry hide dead of anthrax, and treated it simply to formic acid and water at blood-heat, or at the temperature of that water, the spores will hatch out into bacilli, and the bacilli will die.

4715. The difference in the temperature?—The difference in the temperature will hatch them out. But we took the most adverse conditions, namely, cold, and if it is to be done cold, then you must have mercuric chloride as a sterilising agent. Therefore, in imposing mercuric chloride, plus the temperature, in a formic acid solution we get a double sterilizing effect. Now I come to the question of cost. The costs that I have been working upon are costs that were given me 12 months ago, but since then formic acid has dropped again very considerably in price, but I am going to give you the most adverse figures against the process. I will assume that you have a pit that will hold 1,000 gallons of water, which will hold 100 dry hides, which after softening and curing should average 50 lb. each. To disinfect that quantity will take of formic acid and perchloride of mercury 13s. 4d. worth at last year's prices.

4716. How many hides do you say?—100 hides. That

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would work out at 1·6*d.* per hide, a trifle over 1½*d.* each. That would be the maximum cost at the dearest port, namely, Delagoa Bay. Take Shanghai, the cost would work out at 1·3*d.* If you are dealing, as I have stated in that little brochure, with a hide weighing 100 lb., which we do not get abroad at all, it would work out at about 3½*d.*, but we do not get them. If you were to subject, say, goat-skins or sheep-skins to the same, you would get in your 1,000 gallons about 1,000 sheep-skins or goat-skins. The result is that the cost would work out at about 0·1*d.* The value of one of the hides would be about 25*s.*; the value of the goat-skins would be from 2*s.* 6*d.* to 3*s.* each; so you see that the cost of sterilisation is a mere flea-bite compared to value; but, on the other hand, I would point out that whether the hide is softened in Shanghai or softened in England it makes no difference. I would just like to state that the cost of the formic acid has been given to me by the Formic Acid Trust—it is practically a trust now, though there are a number of manufacturers outside it—and it has been given to me within the last 24 hours. They tell me that they can supply mercuric salts at a price of 2*s.* 2½*d.* per lb. delivered in Shanghai. I have taken the price at 2*s.* 6*d.* in my costings. They gave me a price for the formic acid in Delagoa Bay of 43*s.* 2*d.*; I have taken it at 45*s.*, and I understand from the largest makers of mercuric salts that if we were estimating an average cost for mercuric chloride, on the basis of calculations in large quantities, we could reckon it at 2*s.* per lb. That is from the makers. The salesmen want 2½*d.* per lb. extra. I have estimated the cost at 2*s.* 6*d.*, so that in all these figures, Mr. Chairman, I have endeavoured to exceed the estimate.

4717. (*Chairman.*) You have been talking, of course, merely of anthrax, have you not; I mean as regards this treatment?—Yes.

4718. For foot-and-mouth disease that amount of treatment which you propose would not be necessary?—No.

4719. Not to that extent, anyhow. But you have really been treating for anthrax?—For anthrax. The suggestion I should like to make as to the treatment of hides from foot-and-mouth disease—

4720. At the port of embarkation?—For foot-and-mouth disease would be much simpler.

4721. Then, we should like that, please, because you have been treating mostly of anthrax, have you not?—Yes.

4722. Would you tell us that, then?—Hides from countries where foot-and-mouth disease is prevalent—take the Argentine—in my opinion, should be thoroughly well washed after flaying—in half per cent. solution of formic acid. If the bacilli, or whatever they are, of foot-and-mouth disease are aerobic, that is, living on oxygen, then what happens probably is this: formic acid probably acts as a disinfectant by this fact, that if these microbes demand oxygen they will pick up from the formic acid one atom of oxygen. The resulting compound will be formaldehyde or formalin; so that probably formic acid acts as disinfecting in that way, the absorption of the atom of oxygen would leave a formalin molecule, which would convert them into a solid mass. That washing should always precede the salting; it would not then be necessary to put them into a salt-brine bath. They may be salted in the ordinary way. If they do not use formic acid, then they should substitute salt in the washing process. But I prefer the formic acid. Further, I would recommend that when they are washing any of the offal it should be so treated, and when they are washing the carcasses with hot water it should also be so treated that the formic acid should be in the water. You might ask the question that that would prevent it being edible. I have carried out a lot of experiments myself in that direction, and find that all the formic acid evaporates in cooking, being a volatile acid, it absolutely disappears, leaving no taste. In fact, I know it is being done by one large company at the present moment.

4723. You suggest that dry hides should be treated at the port of embarkation before they come into this country, and that they should be treated both for foot-

and-mouth disease and for anthrax, with a solution of this formic acid?—Yes.

4724. Well, now, what about wet hides?—Wet hides do not bring in anthrax. We have no direct evidence of any wet hides ever having transmitted anthrax to human beings, or elsewhere.

4725. What about foot-and-mouth disease?—I dealt with foot-and-mouth disease by saying these wet hides when they are flayed from the animals should be washed. My proposition covers both. Wet fresh hides should be washed with half per cent. of formic acid in cold water or by salt-washing, and before salt curing dry hides should all be treated by the formic-mercury process. All hides would then be shipped in a salted condition.

4726. If those hides were treated in that way, I presume there will be no necessity to go into the disinfection of the holds of ships as regards hides?—That I have a note of. I was going to wind up by saying that I think the process would be welcomed by the ship-owners because there would be no necessity to disinfect the holds of the ships so far as infection from hides is concerned. It would be necessary to wash ships' holds out as you would wash your own house, but not disinfect.

4727. Talking of hides. If the hides were treated, as you propose, at the port of embarkation, there would be no necessity to disinfect the holds of ships, lorries, or railway trucks on this side?—No, there would not.

4728. Is this particular solution that you have mentioned, from what you have told us, you consider it the best, and you have proved all this yourself?—Yes, I have personally proved it, but I do not advance any of my proofs, because naturally I should be considered a prejudiced party.

4729. Now, you talk about a pit on the other side which will hold a thousand gallons of water, and that would hold 100 hides?—Yes.

4730. When those hides were taken out, would that solution in the pit do if another lot of hides were put in; would it be effective?—You could do so, but there would be no advantage, because you will have exhausted all your mercuric chloride.

4731. It would be taken out by one lot?—It has practically exhausted itself. When there is so little value left behind, it is not worth while running any risk because there would be a lot of dirt which is evidenced by this (*exhibiting specimen in bottle*); there is a lot of dirt consisting of blood, filth, and earth, which comes out of these little pieces, and that is what I want them to keep; I do not believe in buying Chinese real estate.

4732. Really, you are very strongly of opinion, in your evidence this morning, that you consider hides a great source of infection, both for anthrax and foot-and-mouth disease?—Anthrax by dry hides, but not salted hides, although the latter, in the case of foot-and-mouth disease, salted hides may be. I am rather inclined to think that you are likely to get foot-and-mouth disease through imported hoofs the horns because they would be dried out in the open, and you are liable to get films of gelatine enclosing moist matter which will remain moist like a cell, and will be so carried to Europe, and on being exposed here, burst, and so you may get contagion. I should like to see horns and hoofs treated on formic-mercury lines, and bones treated on the lines laid down by the New Zealand Government.

4733. What was that?—I think they are treated with an inorganic acid, sulphuric; I could get you the exact details, if necessary. I would include in my evidence horns and hoofs.

4734. (*Sir Bowen Bowen-Jones.*) Do I understand you to say that hot water and formic acid will be equally efficacious as the solution of mercuric chloride?—For what purpose.

4735. For disinfection?—What disease?

4736. Killing the germs of anthrax?—Oh, no.

4737. Then, what was your reference to hot water and formic acid, for what purpose would you use that?—For washing the carcasses in lieu of plain hot water by adding half per cent. formic acid to the hot washing water.

4738. But you alluded to that with regard to the

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hides as well?—No; fresh hides should be cold water and formic acid.

4739. Yes, I know you have said cold water and mercuric chloride, I think?—Cold water and mercuric chloride and formic acid were the basis of our tests in Europe for sterilisation on dry hides.

4740. Then, let me perfectly understand; for killing the vitality of anthrax you would require a solution in mercuric chloride, 1 to 5,000, with water?—1 to 5,000, yes.

4741. Would you put in formic acid with that?—Yes.

4742. And the combination of formic acid?—A combination of formic acid and mercury in cold water. It is known as the formic-mercury process.

4743. That would be effective in a solution of cold water?—That would be effective in a solution of cold water.

4744. Hot water with formic acid alone would not be sufficient for that purpose?—No, not for anthrax.

4745. But that would be efficacious in preventing disease being brought in on carcasses; foot-and-mouth disease?—I think it would; not anthrax, because I do not think any anthrax carcasses come into this country; I know they do not.

4746. I mean you would use with any process of slaughtering when the skin was being taken instead off the ordinary water, which is used by dipping a cloth in it and washing the carcass as the skin was removed, is that so?—Yes. I have recommended this process to several of the Colonial and the Argentine people in their slaughter-houses.

4747. And it would have no injurious effect on the meat; it would not taste the meat, in your experience?—My experiments show it does not taste the meat after cooking, and it prevents the growth of fungus.

4748. (Sir Harry Verney, M.P.) I have only one question to ask. I do not quite understand about the cost; what is it exactly that would cost 13s. 4d.?—To do 100 hides.

4749. But at 25s. a hide?—The value of the hide would be 25s.

4750. So that 125l. worth of hides would cost 13s. 4d. to disinfect?—Yes.

4751. Can you do that in exact proportions; would 10 hides or 10,000 hides be in the same proportion?—10,000 hides would be probably less.

4752. Is it a practical proposition to disinfect 10,000 hides?—Not the slightest difficulty; you would not do them all at once.

4753. What is the size of the pit you mention for the 100 hides?—The pits they would use for that would be about 7 ft. by 7 ft. by 6 ft. The pit will hold about 2,000 gallons, but half of the pit contents would be hides and other half liquid.

4754. And you think that you could, I suppose. It would mean disinfecting 10,000 hides would it not in some places?—They would have to disinfect an enormous quantity.

4755. And it is a practical proposition is it? If you want all that for 100 hides?—Exactly; they would be disinfecting out there in 24 hours.

4756. You want 24 hours for 100 hides?—For 100 hides in one pit in the East.

4757. Then you would have to have an immense number of pits to disinfect a large number of hides unless you are to wait 24 hours between each?—Supposing a man was shipping at the rate of 7,000 hides a week, which is a fairly large shipment for a man, he would want 10 pits; that is all he would want.

4758. Now, he has nothing of the kind?—Only his hydraulic press. We want to substitute the pits for the presses.

4759. (Mr. Bathurst, M.P.) What is the peculiar virtue in formic acid over other organic acids? Why should you not use acetic, or oxalic, or citric, or nitric, or tartaric, or any other?—On account of its ionization value. Formic acid ranks next to hydrochloric acid in strength; it is stronger than sulphuric or nitric acid chemically.

4760. It ranks next in what respect do you say?—Ionization value.

4761. Its ionization value is important as regards this process?—Very important in this.

4762. Any of these other acids that I have mentioned or the other organic acids can be used in your opinion for this purpose?—Acetic could be used, but it is not as cheap. The others mentioned are unsuitable for our purposes.

4763. That is really what I was coming to?—That is the commercial question.

4764. Well, partly. What I really want to know is this: Bearing in mind effectiveness and cost, is this the best value?—The best value, in my opinion, on the market. You would not use butyric acid because it smells very much like *mal de mer*. Lactic acid you might use, but then in proportion it is very much dearer. Formic acid chemically is the best value, and as an acid for this purpose it is cheapest.

4765. We have been told formaldehyde or formalin would be too expensive for general use as a disinfectant?—Yes.

4766. It, therefore, occurred to me possibly that the formic acid might be correspondingly expensive?—No. Formic acid laid down in the most expensive port, which is Delagoa Bay, is 43s. 2d. per cwt.

4767. And neither that nor the mercuric chloride would in your opinion be so expensive as to make it difficult to impose its use upon shippers?—No, they would get more than a *quid pro quo* in the increased value of the hide.

4768. That is another thing I was going to ask. You admit that there is some cost and some labour; possibly considerable labour?—I have not taken the cost of labour in.

4769. But, admit for a minute that there is some cost and a considerable amount of labour involved in carrying out your process, would the additional value to the vendors more than pay for the cost of the process?—Considerably.

4770. Taking both cost of materials and the cost of labour together?—Yes. Labour is a mere fleabite out in such countries and, of course, would naturally vary according to the country. Labour is paid very poorly, but the value that would accrue to the shipper would be considerably enhanced. He would get his hides in a wet-salted condition, a condition in which the buyer can determine its value. He cannot make head nor tail of it when it is in a dry state, but he can when it is wet and opened out just like a handkerchief.

4771. It would, in fact, operate as a guarantee of genuineness?—Of genuineness, yes.

4772. I wish to ask you one further question on the same point. I understand also, from what you have explained in connection with those bottles, that there would be more hide contents; I do not know what the proper expression is?—Hide substance.

4773. There would be more hide substance that would actually change hands and, therefore, the phrase "higher commercial value"?—Yes.

4774. So it would not only safeguard us possibly against anthrax and possibly against foot-and-mouth disease, but it would be in the interests you suggest to the vendors and the shippers to adopt this process?—In the interests of the entire industry and community. If something like this is not done to stem the loss of hide substance in dry hides, and to conserve hide supplies, as a community you will have to pay very much more for your boots and other leather goods; therefore it affects the community.

4775. You mean owing to the increasing shortage?—Owing to the increasing shortage.

4776. You mention that you have explained this process to the Argentine Government?—I have sent the particulars, but I have not had any correspondence with the Argentine; with America I have.

4777. But you have sent particulars to America and some of our Colonies?—Yes, and to the Continent.

4778. Have any of these countries yet adopted this process?—Well, it is being adopted in various tanneries. It is being considered at the present time by Italy and by Germany and by France.

4779. Considered by their Governments?—By their Governments, yes.

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4780. And has actually been adopted by the tanners?—In some of those countries.

4781. Would you mention any countries in which it is now in use?—Italy, and I know of one case in Germany. I know where it is being adopted in one case in France. I think there are about eight tanners in England who are using it, and there are several in the States.

4782. Have any of these men or firms found any fault with the process?—Not at all.

4783. And they recognise its value from a commercial point of view?—From a commercial point of view.

4784. Just one question with regard to the extremely poisonous character of corrosive sublimate. When your hides are treated in this way, would there be any danger of subsequent contact with food-stuffs on board ship or elsewhere?—Not at all.

4785. Because you suggest the percentage of mercuric acid is so very small?—It will be retained in the hide.

4786. Do you mean then, assuming the hides were wet?—It would be retained in the hide.

4787. But even if wet it could not communicate it to food-stuffs?—You would have to use probably sulphide of ammonia or something of that sort to extract it. You would have to use a chemical to extract it.

4788. You mean mercuric chloride would become so much a part of the hide that you would require some special solvent to get rid of it?—Exactly.

4789. I rather want to get this in evidence. I will not press you too far, but you have brought this process, I think, to the notice of the Board of Agriculture and of the Home Office?—Yes.

4790. And I believe they are considering the value of the process at the present time in each department?—Well, I would like to make a statement.

4791. All I should like to have in evidence is that the two departments are considering its value?—It has been before them for over two years, and experiments have been carried out at the Board of Agriculture laboratory, the nature of which I could disclose, but I am not allowed to disclose them in evidence; I could tell you privately the results. As showing that there is no restraint of trade I have got these, if they may be of any use to the Committee, the use of formic acid in the industry. I can leave them here if gentlemen would like to have them.

4792. Is that a publication of your own?—No, that is a publication of the Oxalic Acid Sales Company. It shows you the variety of ways in which formic acid has been used in the leather industry, showing that it has been absolutely non-harmful in the manufacture of leather.

4793. Those are people who manufacture all these acids?—Yes.

4794. Just to get it in evidence, assuming that your formic mercuric process is effective to sterilise anthrax, it would be more than sufficient to sterilise foot-and-mouth disease?—Yes, decidedly.

4795. (*Major Dunne.*) As regards the packing of these hides: Could you get more of these hides, after they have been treated by this process you described to us, in the hold of a ship, that is to say, soft, than you could if they were sent over dry; would they pack better?—They would be a dead weight then, and they would be put in the lower hold of the ship, being so much heavier.

4796. What I was really trying to get at was whether the process would be an advantage from the ship-owner's point of view, that is to say, whether he could carry more of these hides in his ship after they had been treated than before they had been treated?—I do not think it matters much to the carriers except this, that I think they would rather carry wet hides than dry hides. They all state here that dry hides are carried on measurement and wet hides on weight, and that dry hides pay about double the rate charged on wet hides, on account of the space occupied.

4797. So that it would be really an advantage to carry them wet rather than dry?—Taking everything into consideration I think it would be an advantage to them.

4798. There is one point as regards the setting up

of this plant, dipping, on the other side; would you suggest any regulations as regards inspection or certificates to be sent over, because how far should we be safeguarded that these hides had undergone this process?

—My suggestion on that score is that first of all, of course, the Board of Trade, who are really the importers of the hides and control the shipping, should form a small department with somebody qualified to look after this section of hides and skins from infected countries when shipped to Europe, bearing in mind that we carry about 70 to 80 per cent. of the hides of the world in our own ships, and the British Empire produces by far the largest number of hides and skins, and with each shipment of hides there should be a sworn Consular certificate to the effect that the prescribed process has been duly carried out, and that that document or a copy thereof should be affixed to the bill of lading, and a declaration should be made before the Consul that it has been done.

4799. I am glad we had that, because you did not happen to mention that particular point in your evidence-in-chief?—I did not; I am very glad you have asked for it.

4800. Because, unless we had something of that sort, we should have no criterion that this process had been undergone by all these hides. The importer here would know as soon as he saw the hides whether they had undergone this process or not, but beyond that, as far as a preventive of disease is concerned, the agriculturist and the Government would have no knowledge unless there was, as you just now told us, either some certificate or some label or something or other to show that this process had been undergone by all those hides?—I quite agree and I would like to add, if I may be permitted, it has some bearing, that something ought to be done to prevent the importation of bloody fleeces from the infected countries. It is stated very definitely that, but for these bloody fleeces—that is the only term one can use—we should have no wool sorters' disease. Now my view is, that if we first deal with the sterilisation of hides, we then might take the next step of getting these bloody fleeces excluded at the port of shipment, and they should be disinfected without having the necessity of disinfecting the whole parcel of wool. There are a very small number of them, but if they are kept out there and sterilised by themselves, then it reduces the amount of sterilisation in fleeces to a mere flea-bite.

4801. How would you sterilise these?—In the same way, by submitting them to the formic mercury process; then the blood would be left behind.

4802. Would they have to be dried again?—They would have to be dried, but there is no difficulty in drying them in those countries; the difficulty is to keep them moist.

4803. I suppose these pits would have to be set up at every port which does an export trade in dry hides or in wet hides?—There is no difficulty about the pits. A tanner will build a dozen pits and does not think anything of it; it is only digging a hole in the ground and preparing it.

4804. Both hides? I suppose, what we call colloquially wet hides, would have to undergo this process equally with dry hides?—Wet hides would be immersed only for a few minutes, because while you have got them moist it easily washes off, but dry hides would be immersed until soft.

4805. And, of course, the process as regards the wet hides is a very much cheaper process than the process for the dry hides?—Very much indeed.

4806. And as wet hides are very much more likely to bring in foot-and-mouth disease with which we are more immediately concerned, of course, the evidence you have given us is really almost stronger on the question of foot-and-mouth disease than it is as regards anthrax; that is to say, as far as expense and trouble is concerned?—I think, in the interest of the leather industry as a whole, that all hides should be washed before they are sorted, that is practically the final and almost the only conclusion that the International Commission on the Preservation, Cure, and Disinfection of Hides and Skins had come to regarding the cure.

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4807. (*Mr. Nunneley.*) Would not these dressed or sterilised hides take up more room than the dry hides which are hydraulic pressed?—Yes, they will take up more room and weigh heavier.

4808. Therefore, they will be rather more expensive to carry, will they not?—No, because they are carried at half the rate of dry hides. The shipping people say that dry hides pay double the rates charged on wet hides on account of the space occupied.

4809. Per ton; per weight?—It works out about the same per hide—wet or dry.

4810. Would it add materially to the cost of transit?—No.

4811. You speak of anthrax being more prevalent here during the season when we use artificial foods, but can it not be taken from grass in any way?—Only by grass being infected by an animal having died of anthrax.

4812. You think it only can be taken from an animal having previously died there?—Yes, it does not grow on grass.

4813. Because, as matter of fact, we do have cases of animals dying from anthrax in fields when we have had no artificial food for weeks or months, and where there is no record of anthrax ever having been there before?—That I am perfectly aware of; it is very difficult to decide, but anthrax does not grow on grass.

4814. How do you account for the animals catching anthrax?—Very possibly an animal had been buried there.

4815. We have no record?—I do not think farmers keep any record of where they bury animals.

4816. There is no memory where no animal has been buried for 50 years at least?—They may have been buried 500 years ago.

4817. You think it is still possible for it to come up?—Well, it is quite possible and it is not improbable.

4818. No limit to the time then?—I do not think so. I would just like to refer to a previous question. In a letter here, the (D) Ship Company say: "We obtain a rather higher" (the 'higher' is put in bigger letters) "rate for dry hides and skins as against bag cargo, such as wheat, &c., and whilst the bales are not stowed in any separate hold they are usually stowed quite clear of ordinary cargo." Now you see they get for dry hides a very much higher rate than they get for wheat, for food-stuffs.

4819. You speak of the process of the manufacture of cake not destroying the spores of anthrax. I suppose it would destroy the spores of foot-and-mouth disease?—Yes, if foot-and-mouth disease spores exist. They are too tender; yes, I should think so.

4820. You think there is no danger of foot-and-mouth disease being imported in that way; that if it does come by the cake it must have been by contact with something in England, or in manufacture?—I understand that drying kills the spores.

4821. Referring to the United States method of disinfection, we have been told in evidence that the United States do insist upon the disinfection of all hides; do you not consider that the disinfection that they insist upon is effectual?—Not at all.

4822. There would be no use our taking the same steps as they take?—I think it is a perfect farce, and it is decidedly overcome by certain means which are well known in the commercial world, which are not entirely straight.

4823. That is, that if we adopt any means at all we ought to adopt something different from them?—Let it be a genuine method, that people will adopt because it is their interest to adopt it. Do not impose something on them that they will kick against.

4824. Speaking of anthrax being brought in, can it be brought in from those countries on corn or food of that sort?—Only if it has received contagion by means of dust, or animals infected with anthrax. I will tell you one of the dangers. It is this: that most cattle in China are immune from anthrax. What the amount of immunity may mean I cannot quite say. I have been informed that the Germans, soon after they occupied Kiachow, were not satisfied with the Chinese cows as

milk-givers, and they imported some German cows. Within a few weeks all their cows died of anthrax.

4825. You think the cattle out there are immune against anthrax?—To a large extent, and the human beings very largely so, too.

4826. I take it that the mere touching of hides that are dressed in the way that you advocate by other stuff would not injure the other stuff at all—cakes, or anything of that sort that were stacked against them in the hold, and so on?—It would wet it, or taint it and salt it.

4827. It would not transmit the poison?—It would not poison it; no.

4828. It would not make it injurious?—No. It would not do it any good.

4829. Naturally the wet would not, but the poison itself would not get into the cakes in any way?—No.

4830. So there is no danger of that?—No, not at all.

4831. (*Mr. Richardson Carr.*) You are distinctly of opinion that the chief source of danger of anthrax, and foot-and-mouth disease in England is the importation of hides. One of the greatest dangers we have got to tackle?—I would not like to speak with any authority upon foot-and-mouth disease, but I can speak with some authority on anthrax. I am not sufficiently familiar with foot-and-mouth disease; I am a good deal in the dark about it.

4832. At all events, you think all hides, wet and dry, should be subject to this treatment you have advised?—From infected countries.

4833. We have also been told that calves in their skins have been imported with their heads and their hoofs on. Can you suggest anything that could be done with them, because that might be a source of danger for anthrax as well as foot-and-mouth disease?—Leave the heads and feet on so that the veterinary surgeon at the port could see whether they were affected with foot-and-mouth disease or not.

4834. Would you suggest that calves in their skins should be examined by a veterinary surgeon and have a certificate with them from that port where they are put on board ship in the same way you suggest the hides should?—I think so, and they should be examined at the port of entry to make sure; your veterinary surgeons on the far side —

4835. On this side?—Well, I think they ought to be examined here too.

4836. On the far side they ought to be examined, otherwise, of course, if they are a source of danger, it does away partly with the good in dealing with the hides, does it not?—Yes. If the man on the other side certifies that they are free, and you have 100 carcasses, and they find one amongst them here that is suspicious of foot-and-mouth disease, then you only find that out because you have got the head and the feet on, but if you remove the head and the feet on the other side how is the veterinary surgeon to ascertain? At the present moment they are not examined now at all. They come with their heads and feet on, I understand.

(*Chairman.*) No, I think what Mr. Stockman said was this: He said he should like to see the time when they do come with their heads and feet on.

(*Mr. Richardson Carr.*) They come with their skins on.

(*Chairman.*) I think the head is not on.

(*Mr. Richardson Carr.*) Are the feet on?

(*Chairman.*) No.

4837. (*Mr. Richardson Carr.*) They come in their skins, but you would like the heads and feet on if they have their skins on?—So as to give the veterinary surgeon a chance to examine them.

4838. You further recommend that these should be examined on the side of debarkation when they are put on board ship, and also at this end, too?—I think this end is more necessary than the far side.

4839. Do you think so, because if you think it is necessary that the hides should be sterilised on the other side you are contaminating the ship if you bring the calves, and if they bring the disease on?—I do not think you ought to import; if a calf has got foot-and-mouth disease, I do not think it ought to be shipped from the other side.

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4840. That is what I say?—If he comes on this side he comes into quarantine.

4841. He is a dead calf?—He comes into quarantine.

4842. Not now he does not?—Does he not, now?

4843. No?—Well, I should make him come into quarantine so that they might destroy it.

4844. But it would be better to have them certified on the other side?—Exactly.

4845. Otherwise you will have to disinfect your ships again, which we want to do away with, and we seem to be able to do away with on your principle?—But you would have your veterinary surgeon on the other side, an Englishman, would you not?

4846. That I do not know, but you suggest that he should be?—I should, certainly.

4847. Or else it does not do away with all the risk after the precaution we have taken with the hides, if we let the calves come in in that way?—No, it does not.

4848. You do not think there would be the slightest opposition on this side by the leather trade, by the hides being treated in the way you suggest?—You mean washing them?

4849. This disinfecting process?—For the dry hides?

4850. For any hides. You do not think there will be any opposition by your people in the leather business on this side in tanneries for these operations to be carried out in the way you suggest?—I would not like to say there will be no opposition, but that that opposition—

4851. Could be overcome?—Once it is appreciated what the gain is to the tanner, and one has spent a good deal of time and money in demonstrating that, and so have other people, that the tanner is going to gain. Immediately the tanner sees he is going to gain he will very quickly realise the importance of it.

4852. You think it could be got over, anyhow?—I do.

4853. (*Mr. Morrison.*) As regards these methods, supposing there was some source of infection on the hide of the calf which, of course, you could not detect even if you had a veterinary surgeon, would it spoil the calf at all if that was disinfected with formic acid, a weak solution of formic acid, before it was put on board?—I do not think it would hurt the hide at all if it were washed with half per cent. formic acid in water not exceeding 110° F.

(*Mr. Field, M.P.*) But what about the meat?

4854. (*Mr. Morrison.*) Would it injure the calf for sale?—You would have to go over the skin with a scrubbing brush.

4855. It might be sprayed, possibly; but I want to know if it would leave any taint behind, formic acid?—I do not see how a spray would be effective.

4856. But supposing it could be done, would it leave any taint behind; spoil the meat?—No, not on the outside of the skin; I do not think it would be effective.

4857. You do not think it would be effective?—No, not spraying; the most effective way is to examine the beast on the other side with the head on.

4858. The hide, of course, would show nothing?—Nothing at all.

4859. Supposing there was foot-and-mouth disease in the calf?—It would not show anything at all, so far as I know.

4860. But, would not the formic acid be a sufficient disinfection for foot-and-mouth disease if it were simply in contact with something?—Under certain conditions it would, but I do not think spraying the skin on the dead carcase would be effective, because you would not be able to penetrate it; you would have to thoroughly saturate it.

4861. But the infection would be on the hair, on the skin. Supposing it had been taken from a byre or some place where there was infection, the spraying would get rid of anything on the hair?—I would rather duck it just for a few minutes.

4862. That would spoil its value, would it not, for food?—Well, I would not like to say so, and I would not like to say that it would not.

4863. You consider bones and hoofs and horns dangerous for anthrax?—Yes.

4864. Do we get large quantities of these from

China and India?—I know that very large quantities of bones are shipped from China, not always animal bones; I have seen human bones shipped on board.

4865. To this country?—They were going on British steamers; I never asked the destination.

4866. And I suppose we get a good quantity from the Argentine?—We certainly get from the Argentine, from the figures I have.

4867. You advocate, I understand, that all this material should be disinfected in the same way and in the same process as you disinfect hides?—Yes, on similar lines.

4868. Would you immerse all these in water?—With regard to bones I think you should use a very much cheaper acid than formic acid.

4869. But still you would have the immersion?—I would have the immersion.

4870. Do you know what the New Zealand people do?—I think it is the use of sulphuric acid.

4871. In an enclosed chamber?—No, I think they are put into pits.

4872. Into pits?—I think so.

4873. Then is it a solution they are put into?—A solution, and then they are dried. There is no difficulty in these countries from which we get disease in drying.

4874. Do you know whether the New Zealand people disinfect at New Zealand or at the port of embarkation?—At the port of embarkation.

4875. Did they not change to the other end years ago, when they found there was some difficulty in placing reliance on people at their own end?—Yes.

4876. On their own men?—Yes; I think they have to be accompanied by certificates.

4877. Are you quite certain they have not altered so as to make the disinfection now carried out on their own shores?—My information was given me, in fact, it was confirmed again within the last few months; whether they may have altered in that time—

4878. It is further back than that. I thought they had changed. There was a talk of it; I was not quite sure whether they had done so or not?—I could ascertain the information within the next few minutes.

4879. It is not important, but leads up to the other point, whether you consider certificates got on the Continent, or anywhere else out of Britain, as regards disinfection, always quite reliable. For instance, take these American certificates; the hides must always bear certificates that they have been disinfected, I understand?—Yes.

4880. Do you consider that these certificates are always reliable for as much as they say?—Well, I confess my faith in human nature is that there are a great many Ananiases about.

4881. That is to say that you do not in this case think that these certificates are reliable?—I would not like to go that far. You see, if you impose, as the Americans have done, three impossible conditions that are not in any way enhancing the value of the material for the importer or exporter, you are producing Ananiases; but when you bring up a process that is going to increase the value for the importer and exporter, you will reduce the number of Ananiases considerably. It would be the man who would be operating against his own interests. A man will go and swear a good many things before a consul.

4882. So that in the case of hides, where you were going to increase the value of the hide by this process, you think you would probably get a good reliable certificate?—Supposing that he restores the hide with formic acid alone in infected countries, and he does not use any mercuric chloride, you would send them out from those countries in the wet salted condition. If he only does that he will leave behind all the dirt and filth and blood, which is the main danger. He can perform any trick upon you except when using an acid.

4883. But in the case of bones and hoofs, where you are going to put out expense and get no corresponding improvement in value, the temptation would be to produce an occasional Ananias?—I am afraid it would.

4884. More at least than in the other matter?—Yes, I am afraid it would. It is rather a question for missionaries.

4885. Supposing this process of yours is put into

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force in China, say, I suppose it means that the actual buyer of the skins would have to provide pits and see that the work was carried out?—No, the exporter, because these hides are sold by auction in this country.

4886. He would be the buyer from the Chinaman?—I propose to change the cost of restoring the dry hide from the tanner on this side to the exporter on the other side.

4887. He buys from the Chinaman, and he prepares the hides on the other side?—Yes. At present it is the tanner in this country who restores the dried hide. I propose to discharge him from the duty and put it on the exporter, and in doing so get him to sterilise the hides at the same time.

4888. I suppose, however, the exporter at present, until the process is better known, would have a difficulty in getting from the buyer on this side, the tanner, his extra price so as to recoup him for his extra outlay?—I do not think so.

4889. In the meantime, until it is better known, he might, might he not?—I do not think so, because there is a disposition to gradually change in certain countries from the dry-hide to the wet-hide conditions, because they see that they can get more per lb. or per ton for wet hides than they can for dry proportionately.

4890. If that is the case, why do we not find commercial men going into it more extensively than apparently they do?—I do not find much philanthropy in business. They will work along the line of the least resistance, especially in those hot countries where they do not like being fagged too much, and the great difficulty, for instance, in India, is to get the man who is out in Calcutta—he is not usually the head of the firm who has got the capital in it—to take the liveliest interest in the firm's concerns, and he is not likely to push a thing like this, and he will work along the line of least resistance.

4891. It is the disinclination to take the trouble to change?—Yes, he is quite satisfied. If his firm are doing well he does not see why he should change.

4892. So, even supposing the Government here were not enforcing or putting forth such regulations, in the course of time you believe that your process most probably would become universal, or nearly so, or a similar process?—I believe in time it would do so, but that time, I think, might be hastened by judicious pressure on the lines I have suggested.

4893. (*Mr. Field, M.P.*) I take it you are entirely in favour of this method which you have brought under our notice, of treating hides and skins, and the bloody skins, with this mercuric chloride, and that they ought to be done before exportation on the other side?—Yes.

4894. Have you any suggestions to make to this Committee as to how common action could be taken by the various Governments or commercialists interested in this trade to bring about that state of things, because that is really the kernel of the whole business, you know?—As one phase of common action—it is not in the reference before you, Mr. Chairman—there is the question of the warble. That is a matter of interest to everyone connected with agriculture and the tanning trade. We in England here have what we call an Allied Trades Committee, who have taken the matter up in conjunction with the Board of Agriculture. We want to know the whole life cycle of the two warble-flies which affect the bovine species. Through the French Association for the Destruction of the Warble, we are co-operating, and they have issued all the known matter upon this warble-fly, publishing their results in book form illustrated in colours. They are beautifully got up, showing the effect upon the hide. I think that is the most interesting volume (*showing volume*). There are four volumes here, and these are published. If the Committee like, I present the four volumes; perhaps the members would like to pass them round—they are interesting. I can get some more from Paris. And they, in turn with the Belgians, the Germans, the Danes, and the Italians are working in co-operation. That is purely in the interests of international relations of one country with the other; we hope to be able to devise something. Throughout these countries we have various Tanners' Federations, where, like other industries, we have all got our faults in common, and we are

all anxious to get rid of them. I think, however, through the Tanners' Federations and through the Meat Traders' Federations and agriculturists of different countries, the question may be approached, and also, I think, through the Boards of Agriculture in these different countries. I see no reason why this question should not be taken up through our Foreign Office first, and eventually come to some International Agreement in the matter, because those countries do not want anthrax; they do not want foot-and-mouth disease; they do not want warble-flies. I am acquainted with several languages, and in that way get to the heart of the people, and I have not found any of them in love with any one of these diseases; they would be very glad to get rid of them.

4895. (*Mr. Bathurst, M.P.*) Do you suggest that the warble is brought over even in foreign hides to our own farm premises?—I have not made any suggestion on the subject at all. That simply arises out of the question of international action. What I do think and what I have not raised before is, that it wants investigating by entomologists that flies may bring over diseases from the Continent.

(*Mr. Field, M.P.*) I only wanted to know how it was relevant. Although this may be a little outside our terms of reference, it is a subject in which I take a great interest. Well, strange as it may appear, I think I was the first man who introduced any agitation about this warble-fly many years ago to the International Federation of Meat Traders, of which I happened to be President, and ever since we have been carrying it on, and I have had exhibitions of these warble-flies. One hide we had in Dublin had 700 holes in it. Of course, it is not exactly in the terms of our reference, but it is germane to the subject showing how international co-operation could be ensured against these diseases. If I may, I should like to ask you a question about this warble-fly; do you think from what experiments—

(*Chairman.*) I do not want to stop you if you ask about the warble-fly as regards international action; I quite agree with you, but I do not think we must go into the question of the warble-fly.

4896. (*Mr. Field, M.P.*) I will ask the witness privately afterwards. Well, now, would it not appear to you that in any negotiations we make on this question on international co-operation, they should first come through the Board of Trade and the Foreign Office?—I do.

4897. Before getting away from the technique of this question—I think this is more important about the technique of how the infection is carried—would you be prepared to make a suggestion to this Committee that we ought to suggest some such action as a result of our sittings here, because these diseases apparently come from these foreign countries?—I do, and I may say that, speaking on behalf of one's scientific colleagues on the Continent, such international action was discussed very fully at the Turin International Congress, and it was earnestly hoped and desired that such international pourparlers should take place with the view of coming to some decision on this matter.

4898. Common action?—Common action. They have their difficulties. Germany is probably in the worst difficulty, because she is surrounded by other countries. We stand surrounded by seas, for which we have a great deal to thank God, and I am sure that Germany would come into line, and most of the people who would have to advise the Government I personally know.

4899. Well, so far as your opinion goes, are you of opinion that the course which you have suggested here with regard to the disinfection of all these materials, hides and bones, calves before coming into this country, could be adopted in these other countries without much trouble?—I do, I think they may be very easily adopted.

4900. The reason why I have come to that conclusion is because this process would make the stuff more valuable both to the seller and to the buyer?—Yes.

4901. And if you had co-operation on the part of the buyer and the seller; the seller, of course, means the foreign countries; we are the buyers?—Yes.

4902. And if it was our mutual interest to have

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this new method of export and import introduced to the mutual advantage of both parties, you think there would not be any insuperable objection, particularly if it was backed up by the professionals?—I do not think that the difficulty is insurmountable if it is put before them by the proper parties. I could demonstrate to the exporters how they are going to gain, but I should not like to do that in the presence of an English tanner, because he would promptly say: "Oh! I am going to pay more for my hides." He will not realise until the thing develops in his yard that he is going to gain more leather. The two forces are apparently antagonistic.

4903. (*Mr. Richardson Carr.*) It wants putting separately?—It wants putting separately.

4904. (*Mr. Field, M.P.*) In fact, our present system is a system of preventable waste. Is not that your view?—I want to prevent the waste that is going on.

4905. But our system is a system of preventable waste at the present time?—Yes, it is.

4906. And if we could convince both sides that it was to their mutual advantage that this was changed, you think that there would not be any great difficulty about it?—I do.

4907. Except the absolute conservatism of the English people—commercialists?—That is all.

4908. It is hard to get them to change their ways?—I would say this, that the tanning trade, as a whole, and I would just like you to understand this, that up to three years ago I was interested in the sheepskin industry; I am not unacquainted with the leather industry, and I am of opinion that the tanning trade as a whole, if it is going to hold its own in England, or in the United States, or on the Continent, will have to be conducted no longer on the old conservative empirical lines, but will have to have their heads highly scientifically trained, and when you get your mind at work you are going to remove the whole element of conservatism.

4909. I was greatly interested in the tanning; I am not now; and that is the reason I asked the question. I entirely agree with you, unless there is a different system adopted, and we bring in science to our aid, all the tanners are going to be left behind?—Yes.

4910. I get back now to the technique just for one minute. Could the hides and skins which are infected be very easily disinfected by the method you have suggested?—I think they could.

4911. And at a comparatively small cost?—I think so.

4912. And the means, with regard to pits, could be easily provided at the various ports of export?—Yes, and at very little cost.

4913. I know that, because I was connected with the tanning trade; I know it would not cost much, and, of course, they could utilise the existing facilities at these various ports now with regard to the wet and dry hides. Is it not the fact that the dry hides when they are brought here have to be wetted again and go through this course?—Exactly.

4914. So it is merely a case, in the case of the dry hides, of mistaken notions, and also for convenience; for instance, in India and China they send them dry instead of wet?—Yes.

4915. But if they were properly handled they would be more valuable as wet hides?—Yes.

4916. It would save trouble here on this side?—I anticipate when you get the process adopted at the port, the native of the country, who is no fool, will promptly realise that that has not been done without some advantage to the exporter, and the effect will eventually travel back in the country, and we shall then eventually have the hides properly cured at their very source, and thus secure a better conservation of the raw hide.

4917. Can you give us any information why the United States, so many years ago, adopted that system, which is apparently useless with regard to these three processes which you have mentioned?—Because it was imposed upon them.

4918. They wanted to handicap the importer and to leave themselves free?—Yes.

4919. But, as a matter of fact, the United States

do not import so many hides now, do they?—Very largely.

4920. I know a friend of mine got an order for 1,200 hides to go to Boston last year. Now, one word about anthrax; you regard anthrax, of course, as probably the most dangerous of all diseases?—Yes, the most fatal.

4921. And you suggest to this Committee that, notwithstanding we are only opposed to deal with foot-and-mouth disease, at the same time we ought to deal with anthrax, because it is brought in with the same nature of infective source?—Yes.

4922. The course that you have adopted with regard to mercuric chloride would kill the spores of anthrax?—It will.

4923. And prevent it being brought to this country?—The incidence of anthrax should fall rapidly in this country.

4924. If your suggestion is carried out?—If my suggestion is carried out.

I would like, with your permission, sir, to ask this witness, who has given us such valuable information, if he would put down in a footnote the idea of how we could carry out this system of International co-operation which would guide us in any recommendation that we may make. Pardon me for being so insistent on this point.

(*Chairman.*) I think you are quite right.

4925. (*Mr. Field, M.P.*) And so notify all these apparently skilled and expert witnesses we have had here. I do not know whether I quite agree with them or not; I do not set myself up as an authority. So these diseases are all imported?—Yes.

4926. Well, if they are all imported, if we can keep them out, we never can have them; is not that so?—That is it.

4927. We cannot keep them out unless we adopt some system whereby we can ensure the co-operation of these foreign countries. If we can adopt such a system and make a recommendation that can be practically carried out, apparently with the goodwill of those on the other side, for our mutual benefit, I think this Committee will have done a good work. It is really the only thing I see that we cannot deal with of a practical nature?—Well, my suggestion is that the Board of Trade should take the matter under their care as being the Department who are interested in the importations. The Board of Agriculture also are interested in the importations as conveyers of the disease to the animals. The Home Office are interested so far as the industries are concerned affecting human beings. The Local Government Board are interested so far as the effluents from those industries are concerned affecting the streams, and the animals watering out of these streams, because we know that animals have been infected with anthrax through drinking from streams which have received the effluents from certain industries. Therefore it comes back to the Board of Trade, who are interested as the importers. They should, in my opinion, form a small department to deal with this question. It will assume various phases, and each phase wants dealing with on its merits. Each country will almost want dealing with on its merits, and having formulated that department and that scheme, then through the Home Office approach these foreign Governments with the view of conferring together in our mutual interests, and in that way arriving at a common ground of action.

4928. Only one more question. Do you take the view that I hold, that sufficient interest has not been given to these questions? I mean official interest. Of course they have worked on the lines that were laid down for them, but still we have not progressed as far as we might have done?—You cannot blame—

4929. I am not blaming anybody?—No, we cannot blame the officials for not taking interest, because no one connected with the industry that I know of, except myself, has taken the same interest in the raw product. You see anyone taking up this matter finds there is no money in it for him as a professional man. A leather-trade scientist goes into science to make money out of it by his intellectual work and so on, but in the raw product there is no money to be made. It is only a by-product at

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that, and I want, and it has been my endeavour, to try and raise this by-product which forms to-day about one-eighth of the value of the standing beast, to a product for the farmer and for everyone concerned.

4930. The difficulty has been in the beginning that this is a by-product and not practically the main factor of a raw material?—It is not, and I emphasised at the beginning that the leather trade is one of the first six great industries. It is the only industry of these six great industries that relies for its valuable raw product upon the by-product of one of the other six.

4931. (*Sir Bowen Bowen-Jones.*) There is one point I want to be quite clear about, and that is would you sterilise the wet hides with this mercuric chloride and formic acid, or only wash the wet hides with the formic acid and hot water?—Not in hot water; I should only wash the wet hide with cold water and formic acid.

4932. That would be sufficient?—That would be sufficient.

4933. I thought you said so?—Not hot water.

4934. (*Mr. Bathurst, M.P.*) That would be sufficient for what?—For sterilising any wet hide.

4935. Apart from the question of harm to the hide, which you have had in your mind in putting forward your particular process, what disinfectants would be adequate to kill the bacilli or kill the germs of both anthrax and foot-and-mouth disease?—There is only one that has been suggested. It is suggested by Professor Becker, of Frankfort, an eminent bacteriologist, whom I know personally, and I can vouch for his eminence, and that was the use of mustard oil. At the present time it is very much in embryo, but he has shown that with the naked spore, the spore that is not coated with any dried blood, using I think it is about 1 in 5,000 or 1 in 500—I am not sure which—of mustard oil, the spore may be killed. Therefore, if that idea develops still further so far as its efficacy as a sterilising agent is concerned, I should be inclined to suggest that where formic acid is not used for washing hides, mustard oil might be substituted. The reason is that mustard oil may be obtained locally in many countries.

4936. What is it?—The oil of mustard.

4937. Simply oil of mustard?—Yes.

4938. Extracted?—Extracted from the mustard-seed; it is largely used for blistering purposes.

4939. And that would do no damage to the hide?—No; not diluted it has no effect upon the white fibres of the hide at all; when employed it is so very dilute. Like butyric acid, it is an offensive thing to use; if you just smell it it burns your nose; butyric acid would make you sick.

4940. But not used as dilute as you are suggesting?—No.

4941. Do you consider that has an antiseptic effect?—It has a sterilising effect.

4942. Perhaps I am wrong?—The difference between antiseptic and sterilising is this: cold is an antiseptic, you simply hold up the disease for the time being. For instance, to put it in another way. By knocking a man insensible you produce an antiseptic condition, but if you kill him you produce a condition of sterilisation. It may be a homely way of putting the thing.

4943. But in any case it is a germicide, is it, this oil of mustard?—It is. Yes, it is the only other one I have heard of suitable for our purpose. The other method which has been suggested, curiously enough, for disinfecting hides and skins of anthrax is to use hydrochloric acid and salt, which is practically the first process you see here. (*Specimen shown.*) Well, that has not succeeded in everybody's hands. It only succeeds if the temperature of the water is maintained about blood-heat for three hours. If you can do that, what naturally follows is, the spores hatch out and immediately the spores hatch out into bacilli the acid kills them. I assume if you are going to raise the temperature it means putting down a boiler plant in order to get the hot water, therefore I had to turn the ordinary pickling process down at the beginning. I want to get down to the most simple conditions of using absolutely cold water, knowing full well that in the East I would get temperatures about blood-heat, and,

therefore, by using mercuric chloride as well, I get a double effect.

4944. (*Mr. Field, M.P.*) Double the effect by the water in the East because it is warm?—It is warm; the formic-mercury process will hatch out the anthrax spores.

4945. So you have taken the lowest?—I must do if I am to stand up before the world with the process.

4946. (*Mr. Bathurst, M.P.*) Have you ever estimated the difference in cost of your formic-mercury process and the oil of mustard process?—I have not. The oil of mustard process has only just been suggested; it has only been done under laboratory conditions at present, but it does not get over the primary condition of making dry hide into a soft hide.

4947. I know that?—The only point is, can we substitute it for mercuric chloride?

4948. Supposing that for some reason or other objection is made to your particular process; assuming, for instance, that the tanners will not be prepared to accept your process, I wanted to learn from you whether, as to the result of your own investigations, any other sterilising agent would be equally or similarly effective, and you tell me oil of mustard, but nothing else except that mixture of hydrochloric acid and salt?—Hydrochloric acid and salt which depends upon temperature again, so that fails on the primary condition, namely, cold water. As to the mustard oil, you do not get your dry hides soft to start with unless we use an organic acid. The only question in regard to mustard oil is, will it prove to be a substitute for mercuric chloride?

4949. And you rule out formalin?—I rule out formalin and carbolic acid and a number of other things.

4950. (*Sir Bowen Bowen-Jones.*) How would the cost of hydrochloric acid compare with formic acid?—It is cheaper, but I am not so sure it would be cheaper at the port of importation, because you cannot get hydrochloric acid of the same strength in solution that you can the formic acid. It is a question of concentration. You may get hydrochloric acid, I suppose, about one-third strength, perhaps about 40 per cent. strength, not much more.

4951. (*Chairman.*) Just two questions. One is in connection with the question Mr. Bathurst just asked you. You do not approve, I understand, of the United States Regulations as regards this. They use bichloride of mercury?—Yes.

4952. That is not good?—That is what I use.

4953. Is that part of your preparation?—Yes, but they use it one in a thousand, and bichloride of mercury in the presence of gelatine, and without acid or salt being present it will precipitate on the wet gelatine instantly. Now that is no value at all, because you want to go beyond the outer layer. You want to carry your mercuric chloride right away through.

4954. (*Mr. Bathurst, M.P.*) It has a purely local effect?—It has a purely local effect.

4955. (*Chairman.*) There is another question. You say these dried hides ought to be immersed in these pits. How long ought they to be kept in?—Twenty-four hours, not less.

4956. Twenty-four hours?—That is all the time they require in the East. Here, in England, where, for instance, in this weather when the water is very cold, we keep them in about forty-eight hours—three days.

4957. Twenty-four hours would be sufficient?—In the East, yes.

4958. No. But I mean, supposing, say at Hamburg, or any place like that, how long would they be kept in?—That is a place with a temperature about the same as it is here. I am dealing, of course, with the most difficult hide, the thickest. The thinner the hide the shorter the time.

There is one other thing which I am not quite happy about in your evidence, because I do not think you have been able to give us much information, and that is about the calves in their skins, how they are to be disinfected, but they can be examined here when they land by our own veterinary surgeons, but I do not see how they are going to be examined on the other side. Can you give us any idea of how we are to get over that difficulty about calves in their skins? How we are to

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get some kind of disinfection of those things? There is no doubt, I think, you will agree they are a source of infection.

(Mr. Field, M.P.) There are not nearly so many of them coming now.

4959. (Chairman.) No, but there is a certain amount, and I want to get from the witness, if he can give us any idea of what he would suggest. It would not do I suppose to immerse them in these pits, for instance?—No, I should think against foot-and-mouth disease a very temporary washing with half per cent. formic acid in hot water would suffice.

(Mr. Field, M.P.) You would not like to eat the veal after it came out of the pits.

4960. (Chairman.) No, but the Witness says there is no fear of any poison in it. What would you suggest now?—Well, in the first place, I should like to see the heads and the feet left on.

4961. Yes, I quite agree with that?—In the second place if that is impossible I think that the outside of the skin might be sponged over with hot water. Not too hot, as not as a man could bear with his hands, and with some slight formic acid, without touching the meat.

4962. (Sir Bowen Bowen-Jones.) Would formic acid taint the meat?—No, it will all cook out of the meat.

4963. (Mr. Richardson Carr.) It would not get to the meat?—It would not get to the meat.

4964. It is the skin you attach importance to?—It is the skin.

4965. (Chairman.) You think that would meet the point, do you?—Well, it would be a step towards it. I should not like to speak with any authority on the matter. It is a proposition which has never been put to me before. It wants some thinking about.

4966. (Mr. Richardson Carr.) It is an important thing if you are to disinfect all these hides?—Yes, that is a difficult question.

4967. (Chairman.) What Mr. Richardson Carr said very truly to you was, you bring these things over, you do not do anything to disinfect them; they come over in these ships, and it is not much good our disinfecting the hides if you bring these other things over. But you have not had much experience about those?—I have no experience in that. I would only like to say about formalin, that formalin is quite ineffective unless the material is damp. If you take a perfectly dry cake of gelatine, formalin would have no effect upon it; but if that cake of gelatine is wet, then it will harden it as hard as a piece of sole leather.

(Mr. Field, M.P.) The calves ought to be inspected when they are alive, and a certificate given that they have not been in contact with any infected area; that is the only way.

(Chairman.) Thank you, Mr. Seymour-Jones; we are much obliged to you for the most interesting evidence you have given us.

The Witness withdrew.

Wednesday, 6th March 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (Chairman), presiding.

Sir CHARLES D. ROSE, Bart., M.P.
Sir HARRY VERNEY, Bart., M.P.
Sir J. BOWEN BOWEN-JONES, Bart.
Mr. CHARLES BATHURST, M.P.
Mr. WILLIAM FIELD, M.P.
Mr. JOHN HINDS, M.P.

Mr. GEORGE R. LANE-FOX, M.P.
Mr. RICHARDSON CARR.
Major E. MARTEN DUNNE.
Mr. E. E. MORRISON.
Mr. E. M. NUNNELEY.

Mr. W. H. F. LANDON (Secretary).

Mr. W. C. BARLING, M.R.C.V.S., Veterinary Surgeon, Newnham-on-Severn, Gloucestershire, called in and examined.

4968-9. (Chairman.) You are a veterinary surgeon living at Newnham-on-Severn?—Yes.

4970. And during the course of your practice you have come across a good deal of this foot-and-mouth disease?—I have; of course, not latterly.

4971. Not latterly, but in years gone by?—Yes, 30 years ago.

4972. And I gather that you have some rather strong opinions on one or two things about it; first of all, about the latency of the disease, have you not?—Yes, that is so.

4973. Would you mind telling the Committee your opinion upon that?—Well, as regards the disease, its springing up in the unaccountable way in which it does, I believe the germs may exist for any amount of years, lie dormant.

4974. Lie dormant for any amount of years?—Yes, I do. Look at the number of cases of diphtheria that spring up in the human subject. That is not exhausted in the parish for many, many years. Then, again, typhoid fever, but diphtheria particularly. There are some germs, in my opinion, that remain inactive for a length of time until the proper time comes, or the proper subject comes.

4975. Then, do you think this disease really would lie latent, say 30 years?—No, oh no; that is another matter.

4976. Well, what kind of length of time would you say?—It may be a year or two. Oh no, not 20 years; oh no.

4977. Why I asked you thirty years was with reference to a case down in Somerset last year you may have heard of?—Exactly.

4978. And people down there are largely of opinion that some rhynes being cleaned out was the cause of this outbreak?—Thirty years ago; really no. I should not like to carry my views to such an extreme.

4979. But, as a matter of fact, you are of opinion that the disease might lie dormant for one year, or even possibly two?—Yes.

4980. You would not go further than two?—No; I should say two, or perhaps three or four, but I should be very guarded as to 15 or 20.

4981. But what would be the outside limit you would put it at?—I should say two to three years, but I should not like to go further than that. They might say how would you account for the latest outbreak. I believe that the majority of our cases are produced in this way. Of course, for many years past now, hay and straw have been prohibited, have they not? In Holland, of course, you know the disease is always raging more or less from one year's end to the other, also in Belgium, because they have no frontier. In many parts of Holland they mow three times a year their grass, and the last mow is in September, a very moist month as a rule, and that material that is cut then is used for packing articles.

4982. For packing articles?—For packing articles.

4983. Which come into this country?—Which come into this country, and, being moist in itself, I believe

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[Continued.]

the greatest portion of our trouble has been brought about by that packing material, because, as you know, it is flung broadcast after it is taken out of the cases. Then again, you must remember this, there is a quantity of oats and also rye brought into this country as corn, but, of course, hay and straw are prohibited, but corn is not, if I remember rightly.

4984. As a matter of fact, you take it that one of the greatest sources of infection is this hay and straw used for packing?—Not straw, grass, so-called hay; it is very short; it comes in very conveniently for packing and you know what it means, it is flung in all directions. Farmers do not take care of that sort of thing; they do not burn it; it is flung about.

4985. It is rather a difficult thing, I am afraid, to prohibit hay for packing?—Quite, but still I am only drawing your attention to the fact. You must remember this, that that grass at that time of year is very short, and being a moist—I believe the wettest—month of the year, taking the majority of 30 or 40 years, and, of course, you know germs like moisture, hence they have a very short stem to hide themselves upon. Instead of the grass being cut then as it is during the summer, if scientists lead us properly, the sun is the greatest destroyer of germs.

4986. I understand you have a big trade with Holland, have you not?—I have.

4987. In horses?—Horses principally.

4988. And you, I suppose, very often go over there?—Yes, two or three times a year. Even this summer I saw foot-and-mouth disease raging there in a deplorable state.

4989. What kind of Regulations do they have?—Not any at all now.

4990. None at all?—Not any at all now. At one time they tried the same course that we do here, stamping out, but they found it cost too much.

4991. Do they take no steps now to stamp out the disease?—Not at all.

4992. None at all?—None at all, because the only frontier between Holland and Germany is practically a rail fence with a policeman one or two miles apart; that is their frontier.

4993. In your opinion, I suppose it is rather a marvel that we do not have more outbreaks than we do?—I think it is because there is any amount of packing material comes from Germany and also from Belgium, particularly Belgium and Holland.

4994. Could you give us any evidence from your own knowledge of hides which are brought in; do you think they are a source of infection?—That I cannot say.

4995. Or calves in skins?—I should think not. I think they have a better market for their hides and skins than this country would be.

4996. How many years have you been connected with the Holland trade?—26 years.

4997. And is disease more rife now than it has been?—Last summer was the worst outbreak of foot-and-mouth disease I had ever seen or heard of there, because practically from north to south of Holland there is scarcely a farm free from it.

4998. And may I take it from you, they have given up the idea of stamping it out?—Yes, they have when they found it too expensive; the people were not so careful as they might be. The dogs and people who go out on the fields to look at the cattle were allowed to do the same as usual; the only safeguard that was used there was a foot-and-mouth disease sign put up; that was all, not even the words "Trespassers will be prosecuted."

4999. Of course, as regards the latency of the disease, your opinion that it may last two or three years does not quite tally with other evidence we have had. That is your own opinion?—Well, when I speak of that I do not think that with the condition of summers that we have generally that germs would live for that length of time unless they were about buildings. Then, you see, they have no light and no air. It is possible they live much longer. I am speaking about in the open. Of course, this summer was an exceptional one, hence we ought not to have had foot-and-mouth disease at all; that is, if we calculated it on the

sun. It is impossible for any one to give any definite time as to the length of time the germs will exist; I am only speaking in the ordinary way. I do not think anyone could define a time; not define it.

5000. (Mr. Bathurst, M.P.) You lay stress upon the fact that this hay which is cut in Holland late in the season contains a very considerable amount of moisture?—Yes, it does.

5001. And you suggest that in consequence of that it would be a good seed-bed for the germs of the disease?—Quite, I do.

5002. Coupled with heating, I suppose?—Yes. Then there is not sufficient heating or fermentation going on amongst the fermentation of the cut grass to kill germs; there is not sufficient.

5003. Not enough to kill the germs?—No, it may exist in that short grass.

5004. But I take it that the fact that you have got a certain amount of heat coupled with moisture means that the conditions are present which would favour the germination?—Favour the germination, I do.

5005. Or develop the germs?—Develop the germs. Yes, exactly. Then, you see every germ has its resting place; they like a stem, or something of that sort, or some individual to be the bearer of it.

5006. This late cut grass—is it unsuitable for feeding purposes?—Oh, quite. You see, it is so very short, not very many inches high; that is the reason it is cultivated for packing.

5007. They actually cultivate it for packing?—They do. When you come to consider the conditions of Holland, it is absolutely surrounded by water, unless it is in the extreme north, you do not see a fence. All places are divided by water, except in one place you will see a piece of water the width of this table, in another place the length of this room, or the length of this table. The soil is disposed for that sort of thing, absolutely peat soil; the soil is as black as you like.

5008. To your knowledge a large amount of this late cut grass is sent with merchandise to this country?—Quite so, it is.

5009. To your knowledge?—That is so; I am positive of it, because I have many friends both in the north and in the south, and they say it is cultivated for it, you see, year after year.

5010. Cultivated for packing purposes?—For packing purposes.

5011. But for packing merchandise sent to this country?—Sent to this country or any country.

5012. But particularly to this?—Yes, quite so.

5013. I am aware you have considerable experience of English farms?—Yes.

5014. And I think you said just now that, in your opinion, there is a considerable amount of this packing hay used, as you put it, thrown broadcast?—Quite.

5015. About the farms?—Yes. Well, now, you know a good deal about agriculture in Gloucestershire; you know the farmers are not what you might call very prim in their ways, they are so careless and thoughtless as to what they do. If they have that material, or their next-door neighbour, say the squire of the parish, it is taken there perhaps. I do not say it is, but you know farmers are not as careful as they might be; at least, that is my experience of them, and I see that unpacked, and the packing then sent down on their farms; it goes amongst everything happy-go-lucky.

5016. How does it go on their farms?—I believe the greatest source is this packing material.

5017. Where does the packing material come from; does it come from local tradesmen, do you think?—That is so, our local people. If the latest outbreaks of foot-and-mouth disease had taken place close to a seaport one could have said: "Well, now, what about rats in the different vessels?" We know it is not done so, it has all been inland; the latest outbreaks have been inland; therefore I say one must lose sight of the fact that vermin in these particular cases have been the carriers of that; I do not think they have for a moment.

5018. You do not even suggest that rats, for instance, or possibly foxes, may have carried this disease to different parts of the Somerset area where out-

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breaks have occurred?—When you weigh the matter seriously, the very fact of the outbreaks not being close to sea-port places, but more inland—where did the germ originate in the first instance? If the germ deposited itself here I could quite understand rats or foxes, or even hares, may carry it from here to there. But one is at a loss to trace the history of this outbreak, not being near a sea-port place. How has it come? It must come in some material from abroad; but Mr. Rat, Mr. Fox, or Mr. Hare, in my opinion, is not the carrier or bearer to this first place. Rats do not travel so many miles, 20, 30, 40, 50 miles, because they generally find plenty of storage somewhere else; but I can quite understand a rabbit, a fox, or a hare can carry it here or there, but not 40 or 60 miles apart.

5019. I quite see your point. Do you think that possibly birds may be instrumental in bringing diseases into the country?—I do; but, then, I do not think that we have migration of birds from Holland to this country; more so than from here to that country.

5020. Do you think the disease we suffer from in England comes largely from Holland?—I do; Holland and Germany, because foot-and-mouth disease has been just as prevalent in Germany this summer as it has been in Holland.

5021. Yes, I know. With regard to rhynes, of course, we all know what rhynes are; we have some in our country?—Yes.

5022. Do you think it is conceivable that infection could hang about rhynes over a long period?—I do, certainly; particularly with the condition of the material which is at the bottom of the rhyne. There is a certain amount of decomposed matter there, particularly vegetable matter.

5023. Decaying vegetable matter?—Yes. Of course, I am not a scientist, and many people who have had greater opportunity of fathoming the length of time these germs may exist and be progressive afterwards; but, it seems to me, that 20 years for a germ to lie dormant—I do not say it does not—but I have a doubt about it.

5024. The Chairman asked you whether it might not be difficult, assuming that packing-hay is an important source, possibly the chief source, of the disease, to restrict the import of such hay. Can you suggest any means of preventing the dissemination of that hay?—Well, if it is confiscated as soon as it is taken out of the packing-box you would get rid of that, especially if they would burn it.

5025. Burn it?—If they could cremate it. I wish more cremation were taken in hand than there is at the present moment. I do not think we cremate enough. If I had my way, I say that every animal that dies suddenly should be cremated, no matter what it dies from; I carry it to the extreme.

5026. But with regard to the hay, you think that it ought to be made compulsory to burn all hay that has come with packed merchandise?—I do. I think it is very necessary. I believe that is one of our greatest sources at the present day. I know it is difficult to fathom, but in my opinion it is one of the most troublesome things we have to deal with, because hay and straw have been prohibited for years into this country; but corn has not, oats have not, rye has not.

5027. I know great hardship would be done, in your opinion, by insisting upon the burning of such hay as that?—I do not think so.

5028. With regard to a possible disinfectant, we have been told that hides may be a possible means for conveying the disease?—Yes.

5029. And even the holds of ships when they are not properly cleaned?—Certainly. Quite so.

5030. Have you any knowledge of disinfectants as applied to these diseases?—Yes. I am very glad you have mentioned that matter, because I know the supposed great antiseptic is whitewash, is it not, generally? I do not believe in it at all. It looks very white and very nice, but you must remember this, that lime is put on cold, and there is very little movement with the brush. The man takes hold of his brush, yes, he covers it with whitewash, but I maintain positively

that whitewashing in the cold state—it looks very clean—is absolutely no antiseptic. I go so far as to say that, but if that lime is put on boiling hot, and a man will use a bit of elbow-grease with his brush, and keep at it, I believe that burning or boiling-hot whitewash will be a splendid disinfectant, but it is not put on so. It is put on cold, and I believe that it smothers or covers over a great deal of our germ trouble. It ultimately peels off, and what does it mean? It is still active there on the wall or on the floor. If I could have my way I would have the whitewash business dispensed with altogether unless put on boiling hot.

5031. And, then, it is rather the effect of the heat than the lime which kills the germs?—Exactly; you have a scorching condition. Speaking of whitewash again, I believe one of our greatest antiseptics, but seldom used, is gas lime. I have had experience of it. I consider gas lime 75 per cent. a better disinfectant than I do the ordinary lime, even when the ordinary lime is put on boiling hot.

5032. (Mr. Field, M.P.) Gas lime?—Gas lime.

5033. (Mr. Bathurst, M.P.) It is questionable whether that would be suitable for the purpose we have in hand?—I quite agree with you, but it could be used on the floors and the corners of the mangers.

5034. Have you any knowledge of formalin as a disinfectant?—Splendid. One of the finest disinfectants.

5035. But somewhat expensive?—Very expensive, but you can get crude carbolic acid at a nominal cost by getting a quantity, and you can mix the crude carbolic acid with a little glycerine and mix it with hot whitewash. I believe in that immensely, but I should prefer as a disinfectant to scrub those walls with, we will say, 8 or 9 or 10 per cent. of the crude carbolic acid before putting on that hot whitewash, if it can be managed.

5036. Well, it has been suggested to us that the same disinfectant, if stronger, might with advantage be used to kill the germs both of anthrax and of foot-and-mouth disease where there is any probability of their being conveyed through the same medium?—Certainly.

5037. Of course, as you are aware, anthrax being a much more persistent germ, a much stronger disinfectant would be necessary?—It would have to be; yes, certainly.

5038. Have you yourself any suggestion to make as to a suitable disinfectant to apply for both purposes?—Yes; with foot-and-mouth disease a 10 per cent.; with anthrax —

5039. Carbolic would not be sufficient?—No.

Well, I will not press you on that point.

5040. (Chairman.) Anyhow, it wants a much stronger disinfectant. You agree with that?—It wants a much stronger disinfectant. The only thing to do is to cremate everything, not only the animal, but the surroundings where that animal existed.

5041. (Mr. Field, M.P.) Burn the stable, would you?—That is too much. The great trouble with many of our diseases are wooden partitions.

5042. (Mr. Bathurst, M.P.) A suggestion has been made to me only yesterday, which I should like to put to you, because in this connection we are bound to consider anthrax as well as foot-and-mouth disease. I am told that a large amount of wool is used in the form of what is called wool-bagging, and in this wool-bagging the linseed, and I suppose other seeds, are placed when they are pressed in order to extract the oil, and that the oil having been extracted the residue is used for conversion in the cattle cake?—Yes.

5043. Well now, assuming that the germs of either anthrax or foot-and-mouth disease are in this wool, in the raw wool, and were used in that way, do you consider that is a possible or likely source for the conveyance of the disease?—Oh, certainly. It is one of the greatest carriers.

5044. You have never had that suggested before I suppose, have you?—I have heard it, but when you come to consider matters, wool is not used about cattle.

5045. No it is not used about cattle. My point is that it may be used in connection with the production

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of a feeding-stuff which is used for cattle?—It is possible.

5046. At any rate it is not your opinion that cattle cakes or infected grain are important media for the conveyance of disease?—Oh, they are unquestionably.

5047. You think they are?—Unquestionably. All foreign cakes, cotton cake, linseed cake, but the ordinary feeding cakes, milking cakes that are used by the merchants, it is an unusual thing for one to hear of a case of anthrax or foot-and-mouth disease arising from that, but it is the absolute foreign cakes, say the undecorticated cotton cake and the decorticated cotton cake and the linseed cake; these are the troublesome ones, not the made-up cakes.

5048. You mean cakes manufactured abroad?—Cakes manufactured abroad, certainly, or the cakes sent over in a raw state, or the linseed sent over in a raw state.

5049. What we know as the Bombay cake; is the undecorticated cake?—Well, the undecorticated cake.

5050. Does that come into this country unmanufactured?—No, most people manufacture it themselves. Take for instance the people at Gloucester; it is alright; it comes over in the raw state. I do not say that there is not any amount of cake comes over here in the state in which we use it, but a great deal of it is manufactured here.

5051. However, you do regard cakes as a possible means of conveying disease?—As a most troublesome source.

5052. There is just one other subject I want to put to you. You, of course, have seen this disease?—Yes.

5053. Several times in days gone by?—Yes, certainly.

5054. It is an easy disease, is it not, to diagnose?—You cannot make a mistake if you have seen one or two cases. I have some beautiful cases here if you would like to see the result of foot-and-mouth disease.

5055. You say you have seen one or two cases?—Yes.

5056. The majority of the younger men in your profession have not seen many cases?—Well, the symptoms of the mouth are most diagnostic; they make such a peculiar smacking noise.

5057. Do you think that a veterinary surgeon who has not seen the disease after being properly instructed and reminded from time to time of the symptoms could discover it when first he saw it?—Oh, quite so; it is unmistakable; absolutely unmistakable.

5058. Would there be any excuse for a member of your profession who was the inspector of a local authority not recognising the disease at sight?—I should say not, if he has only read of it. I think it is really quite sufficient from the fact that when you go to the animal you see a certain amount of saliva running from the mouth, and you hear a peculiar noise all the time, and when you open the mouth you cannot make a mistake.

5059. (Mr. Field, M.P.) Feet sore?—Yes, particularly upon the inside of the digits. And then again you see this animal walking about very very tenderly, indeed, upon all fours. Some animals have their mouths much more affected than their feet, or vice versa, but I say, without hesitation, a person having seen one case or never having seen it but read the history of it ought to be able to diagnose it.

5060. What other animals in your opinion suffer from this disease?—Sheep, pigs.

5061. Horses?—No.

5062. You do not say horses?—No, I should think not. I have seen horses mixed up with very bad outbreaks and I have never seen any animal affected, and even where horses have been in the same build-ings.

5063. Do you think fowls suffer from it?—I have never heard of it.

5064. Do you think human beings suffer from it?—I should say not; I have never heard of them. You know farmers are very careless, as a rule, after going to an animal they never wash their hands.

5065. May I ask just one more question with regard to research; your profession know very little about this disease so far?—Generally speaking they do not.

5066. And I suppose in your opinion it is desirable to conduct considerable further research?—I think so, certainly.

5067. In order to ascertain what are the real sources, and the nature of the disease?—Certainly.

5068. And you would advocate a large sum of public money being applied to this purpose?—I certainly should do so; with our valuable stocks we must not allow it to rest where it is.

5069. Would you be at all afraid, as a practising veterinary surgeon, of setting up an experimental station where experiments of this kind could be made in this country?—No, not if I had the handling of those individuals or the command of those individuals who were under me, I should not at all. I should consider this one of the greatest steps: A man should not go from these premises or off these premises without changing everything and thoroughly washing himself, particularly his hands and arms in a disinfectant, and also having his boots cleaned.

5070. If you say that, you would not be afraid of conducting this experimental work on an island?—I would not, or even in any local part, on condition that one had the excessive power of seeing everything carried out strictly. It is the half measures that get us into trouble.

5071. You do not seriously suggest that these experiments could be carried out in the country with the danger of the saliva being carried about?—Within a distance of, say, two or three miles of any other place. I might prefer an island, because you are perfectly safe there, but those men who live on the premises and all the surroundings should be absolutely isolated in the most strict manner.

5072. Except in the case of the island I am afraid you would have the difficulty of the land frontier you were mentioning earlier on?—That would be so, but still it is astonishing how those experimental stations are carried out, particularly abroad. We do not hear of any trouble arising from them.

5073. But not, I think, in connection with foot-and-mouth disease?—No, certainly not.

5074. (Mr. Lane-Fox, M.P.) You are aware that the experimental stations abroad have been stopped?—Yes, that is so, but I have not heard of any trouble arising from it.

5075. They have been stopped?—They have been stopped, yes, but I do not think from any trouble arising from it. It has not come to my knowledge. If it is I think it is a matter of funds.

5076. (Mr. Field, M.P.) The expense?—The expense.

5077. (Mr. Lane-Fox, M.P.) You say you saw foot-and-mouth disease freely in Holland?—Last year in Holland.

5078. Does that mean that anybody may mix with foot-and-mouth disease and come over here?—The same as usual, walk over the footpaths. There is only a small ditch which divides the road from the fields.

5079. In your experience are there many men travelling backwards and forwards between this country and Holland who might bring the disease?—No, I think not; I think they would not be so unwise; I think they would know the danger. No Englishman with a grain of sense would be so unwise.

5080. I mean is there any connection?—No, I should say not; no, certainly not; of course, you know the lower class of people lose their heads and take all sorts of liberties.

5081. You have travelled a good deal between here and Holland?—Yes.

5082. You know of no regular trade that might connect one?—Certainly not.

5083. You said that the short hay is grown for packing in Holland?—Yes.

5084. I suppose if they grow it for packing they do not put their cattle among it?—No, they cut it and make a market of it.

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[Continued.]

5085. How do you suggest it could become infected with cattle?—The land.

5086. The land?—It is because their animals are turned out.

5087. They would not mow the pasture?—Oh, yes, they mow their pasture, certainly.

5088. They turn their cattle out into their meadows?—Into their meadows. From the 1st November up to the 1st May practically no animal is turned out, and why I alluded to this packing hay is because it is cut much shorter than the ordinary hay.

5089. It is mowed after the harvest?—It is mowed after the 1st September; any time between the 1st September and the 1st October, but the animals then are not turned out in those fields where this hay is cut. They have their grazing fields and they have their mowing fields.

5090. (*Sir Bowen Bowen-Jones.*) You have told us that you think the vitality of the foot-and-mouth disease germ exists between two and three years?—Oh, I do not say that positively. I only put it just to give you some idea that it does not live a length of time, but I would not carry my assertion to 20 years, because I have really no reason to think so.

5091. On what foundation do you base your opinion that the vitality of the germ exists for between two and three years?—On account of my experience in my own locality. I have known farms affected, we will say in 1900 or 1912, and in the course of two or three years afterwards foot-and-mouth disease has broken out again.

5092. Does that prove that it is from the old germ?—I should say so.

5093. Might it not have been imported again?—No, certainly not, because I am living inland.

5094. But if it were imported in the first instance why should it not equally well have been imported in the second instance?—The cases in my neighbourhood were brought from market. I am speaking now of 30 years ago. These animals that originated the disease in the first instance in my particular part came from Gloucester market. The following day they were suffering from foot-and-mouth disease, and from that moment disease spread, and upon these particular farms that my memory will carry me back to, I say from two to three years, this disease sprang up again, and in a most virulent form, so much so that many of these animals had to be destroyed on account of the condition of their feet.

5095. Could you give us the years and the places where these recurrent outbreaks occurred?—That is going back too far; I did not take notes; I did not know that I was about to appear before you, gentlemen. This happened 30 years ago; if I had taken notes I could have told you, but it is impossible.

5096. No, but you are conscious, I suppose, that we have not had a real widespread outbreak for many years?—Not for 30 years.

5097. 1884?—1884. Yes, I can go back a year or two before that.

5098. Oh yes, before, but I am speaking of the last general outbreak?—The last, yes; no, I should not like to say definitely, speaking on so many years ago, what was the exact period between these outbreaks. I should say two or three years between the outbreaks upon the various farms.

5099. It would be very interesting to me—I do not know whether the rest of the Committee would also like the information—to know the exact places and times when these recurrent outbreaks occurred, because I am rather sceptical as to your facts. You were trusting to memory, of course?—Oh, quite, certainly. It would be impossible for me to go back to that, quite impossible, because in the first instance I never gave it a thought to take any notes from time to time.

5100. Then again, your opinion being that these germs last between two and three years?—Oh, it may last ten; I am only speaking just in the ordinary way. I will not say it does not last 20 years, but I have my doubts about it.

5101. Your opinion being that it lasts from two to 20 years, are you satisfied with the regulations that

are carried out by the Board of Agriculture?—Quite.

5102. The Board of Agriculture, you know, gives freedom to a place from disease after about six weeks' period?—Yes.

5103. How can you argue that that is a sufficient time if you think the germ exists from two to 20 years?—Because the germ may lie dormant as long as you like. The germ may be active after six months or six years. It would be unjust, I think, and unwise towards those people of that district to keep these animals confined too long. You must remember this, that the farmer has to get his living, and very naturally he wants to get free as quickly as possible. Admitted it may be a dangerous step, the same sort of thing may be applied to anthrax; you go to a farm, you see everything on the place healthy; you can only give your opinion at that time or at that moment. These animals are healthy, you see no reason to say otherwise. It is a relief to that man; you must remember this: we are all human nature, and we like to get out of our difficulties as soon as we can.

5104. Then your opinion is that the present regulations of the Board of Agriculture are only justifiable as a matter of expediency?—Exactly, but what I do wish is that you could make your area a little larger than you do.

5105. (*Chairman.*) A little larger?—A little larger; you cannot have it too large. I know there is a lot of friction about it, but be on the safe side.

5106. (*Sir Bowen Bowen-Jones.*) Now, do you think it possible that this foot-and-mouth disease can be brought here from Holland through the importation of your horses?—Not at all, because the horses go from here to there, and not from there to here. The horses go from England and Ireland to Holland, not from Holland to England.

5107. They come from places where you say disease is very rife?—No.

5108. Could not the foot-and-mouth disease be carried in the dung in their hoofs?—Yes, but these horses go from Ireland and England to Holland.

5109. You do not import?—No, export.

5110. (*Mr. Morrison.*) Do you mean to say that no Flemish horses are now exported across to British ports?—I have nothing to do with the Flemish horses; I have nothing to do with the import into this country, only the export.

5111. Still, horses are imported, I understand, from these countries?—Yes.

5112. You agree they are imported?—Very, very few.

5113. If they are imported, they would come, possibly, straight from a Continental farm where there is foot-and-mouth disease to an English farm where there is none, is that so?—You were speaking of the manure on their feet. Well, the first four steps the manure is out of that horse's feet. I do not think it is for a moment likely to bring it here; it does not carry it upon the rail to the station, neither does it carry it from the horsebox or the vessel. Then the very fact of walking a few hundred yards, put it at that, there is not the slightest fear of infection being brought from Holland by the horses in the manure, or in the manure in their feet.

5114. What I want to get at is, do you know of any check that is put upon horses being brought from an infected farm on the Continent straight to a free farm in England?—Except that every horse is inspected or examined by a certified inspector at all ports to see if they are healthy and free. The same animals have the same inspection when they arrive in Holland from here.

5115. That, of course, would not discover any infection that might be on the animal's body?—Not at all.

5116. Then, as regards this grass which is cut for hay, do I understand you to say this is not grazed upon at all?—No, not in the summer time; it is kept for absolute mowing, the same as you have your meadow hay and your grazing grounds.

5117. So that during the summer only it is cut—this has no cattle feeding upon it?—Not at all; it is

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cut year after year; it is what they call their meadow hay.

5118. Are any of the animals fed upon that after it is cut?—No.

5119. Then these meadows really have no cattle upon them at any time?—No.

5120. After the grass is cut, I suppose it is made into hay, is it? Just taken into the steadings?—Yes. They always rick their material outside.

5121. A good deal in the field?—Yes, put them in large ricks.

5122. Where do you suggest the infection would come to that grass or that hay?—From the stems of the grass when it is grown.

5123. Where would they get it from?—From Mr. Germ crawling up it.

5124. There are no cattle in those fields?—It remains in the stock of the grass.

5125. How does it get on the stem of the grass?—It is on top of the soil, and it always finds its proper resting place.

5126. But even so, will not that ultimately become exhausted, even suppose we admit that was so?—No, I am afraid not; the germs take a lot of killing.

5127. This ought to be cleared up, because I understood you to say in your evidence just now that this grass is cut simply for packing?—Simply for packing.

5128. I understood you also to say that cattle did feed upon this grass at certain times of the year?—No, not on this meadow land, because this is kept for mowing only, the same as is done in many other counties in England; people have what they call their meadow hay only for mowing.

5129. (*Major Dunne*.) Is that all the year round?—Yes, in Holland it is.

5130. All the year round?—All the year round.

5131. (*Mr. Field, M.P.*) Would not the cattle have been feeding upon it at some time or other? They do not keep it an eternal meadow, do they?—They keep it from year after year absolutely for mowing; they dress it accordingly.

5132. They dress it, and then the manure comes along?—Just so.

5133. That explains it?—It is obliged to be manured if you look at what you are taking out of your land by mowing it three times a year. You must dress it. You are as likely to bring some germ with your manure as anything else.

5134. (*Mr. Morrison*.) What manure do they put on the land?—Farmyard manure.

5135. No artificial manure?—No; farmyard manure generally speaking.

5136. Is it customary to manure these meadows once a year?—Practically every year I should say, because they are good farmers in that country.

5137. As regards the packing hay, you think that a great source of danger, and you recommend burning?—Burning, I do. I know it is a very difficult thing to carry out, but if we could do it I believe it would stop many of our sudden outbreaks.

5138. Do you think a practical method could be devised for seeing that such a regulation was carried out?—I am afraid not.

5139. Then how could we recommend that burning should be the rule, if we cannot see our way to its being carried out?—You would have to employ many more policemen than you do now if you were to carry it out. It is a very knotty question to solve.

5140. This recommendation could hardly be made then?—I am afraid not. You go to every little grocer's place, every wine merchant's place, whatever you like; you would have, as I say, to have policemen following them about in all directions.

5141. You would not go the length of prohibiting the use of this packing hay?—That is the only thing to do.

5142. Would you think it worth the dislocation of trade, and the trouble?—I am afraid I cannot answer you as I should like to do on that matter. I know the trouble of it; I know the expense of it.

5143. It is really a case of prohibiting the hay or nothing, to your mind?—Exactly, that is so. You are not likely to have anything like the trouble from straw,

because straw is grown under different conditions, and if packing could be carried out with the short-cut straw that would be another matter entirely.

5144. Do you think straw not nearly so dangerous?—I do not; it is grown on ploughed land. They use a great deal of lime in the country upon their land; they are obliged to do so; they are short of lime.

5145. I have often seen packing straw, but not very often packing hay, in Brussels; do you know if great quantities of this packing hay are used?—Well, I cannot say to what extent, to what acreage, but I know there is a great deal; it has never struck me, because when you are travelling by train or staying at a friend's house you do not say: "How many acres of land is this?" You see what I mean; it is impossible for me to say.

5146. Can that packing hay not be used for fodder at all?—No, the cattle will not eat it; there is no goodness in it at all.

5147. As regards our local practitioners, I suppose you know pretty well the class of men they are—the local veterinary surgeons?—In Holland, you mean?

5148. No, I mean here?—Yes.

5149. At what stage do you think it would be quite certain that a young veterinary surgeon who had not seen the disease before would recognise foot-and-mouth disease?—Not until it actually made its appearance.

5150. Would he be able to recognise it, for instance, when the beast turned ill and he was sent for to examine it?—No, certainly not. You may have temperature in forty other diseases.

5151. He may be called in and pronounce it something else and treat the animal for something else?—Until the symptoms really begin to show themselves you are quite at a loss to know what is going on.

5152. And do you not think that an animal like that becomes dangerous and infectious as soon as it is ill?—Oh, certainly.

5153. It seems then that this would be a source of danger; there might be an escape of the disease from a centre to a wide area owing to the disease not being diagnosed in the first instance?—You cannot diagnose in the first, you see, when you have an animal poorly.

5154. Could you suggest any method by which our British veterinary surgeons might have an opportunity of seeing the disease on the Continent or elsewhere during a holiday?—They could see it in Holland.

5155. You could not suggest any practical scheme for giving them an opportunity, I mean?—Not unless I was there and saw the disease raging, and then, of course, I could telegraph. That is the only course. But people do not care to have others trotting about their land more than they can possibly help, very naturally. I know one farmer particularly who would not allow a stranger on his farm. He had a very big milking herd, and he put a notice up that he did not allow trespassers.

5156. (*Major Dunne*.) I think you seem to suggest that this undecorticated cake and this foreign cake that comes in are a possible and even a probable source?—Oh, very probable. I believe they are a great source of danger.

5157. That being so, would you suggest that there should be further restrictions upon the importation of these cakes?—Yes, if the country will allow it, or can allow it.

5158. You, as a veterinary surgeon, in the interests of the stamping out of the disease would like to see the exclusion of these particular cakes that you mention?—Certainly. I have sent several specimens up to the Board of Agriculture for analysis when a case of anthrax makes its appearance, but so far there has been no good result. I may send 1 cwt. up or I may send 10 cwt., and you may not find a germ in that particular quantity.

5159. Does not that rather point to the fact that the possible source of danger is not so great as we are led to believe?—Well, in those sudden cases, where an anthrax isolated case has occurred, they have been feeding on cotton cake or linseed cake—not linseed cake now on account of the expense of it, but the undecorticated cotton cake. The animals have been

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living principally upon that and we can trace no other source. I am speaking of the isolated cases.

5160. On the one hand it would be in the interests of the farmers having their herds more effectually protected to exclude all this foreign cake, but, on the other hand, they would be very hard hit by the high prices which would be the result of its partial or complete exclusion?—The best thing a farmer can do is to insure against anthrax. If he has not had a previous outbreak that is the simplest way out of the difficulty.

5161. In your intercourse with farmers have you ever suggested to them the alternatives, greater immunity or less expense?—Yes, but can you admit it without a great deal of risk?

5162. Which, in your opinion, is the greatest, the risk or the disadvantage of higher prices as the result of the exclusion of foreign feeding-stuffs?—Well, I should take the risk.

5163. In other words, let things remain as they are?—And insure. You can insure against anthrax. I should take the risk, because if cotton cake is prohibited I know it would be a terrible inconvenience to the farmers.

5164. Just one question as to the administration of the Board of Agriculture. Have you got any suggestions to make to the Committee as to either the relaxation or the tightening up of the present regulations?—I would make them as strict as possible; if it is possible, make them more strict.

5165. But you have not got any definite suggestion to make yourself?—No. I can follow the Board of Agriculture; if I could have my way I would make them a little more strict than they are now, you cannot be too careful.

5166. Because we have heard in the course of the evidence that some people would like these regulations made less strict, but your opinion is that, if anything, you would like to see them tightened up?—I should.

5167. In what particular form?—First of all, a much larger area. I think that is one of the greatest things, and, if you like, slaughter at a much further distance from the centre of disease than you do at the present moment. I am a great advocate also for stamping it out.

5168. Regardless of the inconvenience of the people concerned, or of the expense of the State?—Or of the expense to the State, exactly. Of course, one is naturally very, very sorry for those individuals who are inconvenienced. We all have to submit sooner or later, and to make as secure as you possibly can, have a wider area, and carry out more slaughtering if possible. I know it is a very expensive game, and I know it would bring a lot of trouble, a lot of angry thoughts, and a lot of angry words; I am fully aware of it.

5169. (Mr. Field, M.P.) You are of opinion that this disease is not indigenous to this country?—No.

5170. You think it is like a great many other dangerous things, it is imported?—It is imported.

5171. Have you any theory, any definite theory, briefly, as to how it is principally imported?—You have heard what I have said as to the packing material. I believe that is the greatest source.

5172. You believe that the packing material is the greatest avenue by which this undesirable visitor comes to our shores?—Yes.

5173. Now, with regard to your own profession, you say quite truly the majority of the young men, of course, have had no experience of it?—No.

5174. I have had experience of it, and I agree with you that it is probably the most easily diagnosed disease possible?—Quite so.

5175. Would you be in favour of your profession undergoing what is called a post-graduate course?—Yes.

5176. With regard to this and other diseases?—Quite; a great advocate for it.

5177. You are a great advocate for it?—Oh, a very great advocate for it.

5178. Would you be prepared to advocate that the Board of Agriculture should not in future, after the lapse of a certain time and giving notice, give any post

as a local veterinary officer except to a man that had such a qualification?—Yes.

5179. You would go so far as that?—I would.

5180. Are you of opinion that the present system adopted by the Board of Agriculture is quite sufficient to meet all trouble?—Yes, unless you make it a little more extensive.

5181. You seem to be exactly in opposition to the majority of the witnesses we have had here; they go for a smaller area?—I am very sorry to differ.

5182. You are an Imperialist; you are an advocate of expansion?—I am.

5183. What would you make the area?—Well, I forget now from memory the exact area, but, in my opinion, you cannot make it too extensive.

5184. Too big?—Too big. I think it is far better to be wise before the event instead of after the event. Hence, I say, make it as large as you dare do. I know it causes its troubles.

5185. And, in addition to that, you would burn everything?—Cremate.

5186. Houses and all?—All the wooden houses, I would.

5187. You would not burn the men, I take it?—No, I hope not; they may be cremated later on.

5188. But you would really cremate all the animals that came into contact?—Yes.

5189. And the Suffragettes?—Yes, I agree with you in that statement also.

5190. We had a very important witness before us yesterday and he advocated, and if I may be permitted to say so, I think the majority of the Committee agreed with him, the hides should be disinfected?—They should be sterilised in some way.

5191. Sterilised and disinfected before being exported at the other side?—But I do not think we get a great quantity of hides into this country; they go to Belgium.

5192. And a great lot come here; this is an expert, but you would agree with that?—Oh certainly, most positively.

5193. Do you think, would there be any difficulty of getting your profession from the various European countries to co-operate in taking common measures to prevent the importation of this disease?—Yes, I am sure they would, gladly.

5194. You have a Congress coming on I think in 1914?—Yes, in London.

5195. Everything comes to London. Formerly it was all roads lead to Rome; I think it is all roads lead to London now?—Yes.

5196. You think there would be no difficulty in getting your profession to co-operate?—Oh, I am positive they would be only too pleased to do it.

5197. You advocate the burning of the hay and straw, and the animals?—Yes.

5198. Does it strike you as being anomalous that, although we have an Order forbidding the importation of hay and straw from countries which are infected with the disease, that still we allow hay and straw in as packing?—Only hay as packing, not straw. They cultivate this hay for that purpose.

5199. We have had evidence that there is a lot of straw comes in here as packing?—Well, they cultivate this. In my opinion the danger from the straw is a minimum from what it is from this packing hay.

5200. I do not wish to go over the same ground again, but you have been in Holland a good deal?—Yes.

5201. And you tell us the regulations in Holland are not very strict?—Practically they are nil.

5202. They are nil?—They are nil; this last summer they were nil.

5203. That is to say, if there was a farm on which there was this disease, a man could go in there and get off again and nobody would mind?—They stick up a notice, "Foot-and-mouth disease."

5204. But do they prevent you going in?—Not at all.

5205. So that you could be a free carrier from one farm to another?—Two or three years ago, I forget now, small-pox existed amongst sheep. I was natu-

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rally very curious and went into the field where those sheep were; I was not interfered with.

5206. Brought it away with you?—No.

5207. You did not take it yourself?—Not myself.

5208. You are satisfied about the regulations we have in existence, are you?—Yes.

5209. Except that you would like them made more stringent?—Yes, I would.

5210. You would have more burning and have a larger area?—Yes.

5211. (Mr. Hinds, M.P.) With regard to the foreign grass you spoke about coming from Holland, I understood you to say, knowing that is a source of infection, it would be practically impossible for us at the present time to get any legislation to do away with it?—I am afraid it would. Of course, you could prohibit it, being hay, if you like; it is hay material, and the only thing is to stop all packing with hay material and have straw material.

5212. At the same time you say we could not really carry out your recommendation in that respect?—No. The only thing to do is to restrict it as packing material; have straw material, straw or shavings for substitute.

5213. With regard to this disease, you say the young veterinary surgeon at the present time does not know it very well?—No.

5214. And the farmer does not know it very well?—Not the present generation of farmers; they have never seen it.

5215. Would you advocate anything in the way that the Board of Agriculture should send out any literature at all to the farming community?—Yes, but there is nothing like ocular demonstration. If you once see it you will never forget it. You may preach as much as you like, and read books until you think you have every mortal disease under the sun, but you have not got it.

5216. We are talking of checking it?—Once seen never forgotten, and it is a thing you may read about, you may pick up any books and you fancy you are suffering from every ailment, and the very ailment the farmer thinks he has got he has not got amongst his cattle. Reading is a most difficult thing to follow in the way of disease.

5217. Would you think that the local authorities in appointing their veterinary surgeons would be ready to get their appointments confirmed by the Board of Agriculture?—Yes.

5218. Amongst your profession there will be no objection to that at all, do you think?—No. The only thing I regret is that I am not a younger man; then I should go in for post-graduate courses, or if I had facilities.

5219. You said that birds may be a source of infection. How do you account for Jersey now being so immune from this disease?—Jersey; it may be imported there.

5220. Birds fly to Jersey?—Yes, I know, but it has not been traced to Holland though, or any other country definitely. Some birds do migrate, and they may be carriers of it, but I scarcely think so in this case. Of course, it is impossible to say; birds migrate thousands of miles.

5221. There is another matter I thought of asking you with regard to milk-cans, the milk-cans that go to farmers from towns; we have been told that some of these cans are used for other purposes?—More than likely.

5222. Do you think there is a source of danger in that respect?—I do. I do not think agriculturists generally realise how careful they ought to be. So many of them are happy-go-lucky. What will do to-day will do to-morrow. They never think of these things; but I know it is very, very difficult to instil into their minds that they cannot be too careful.

5223. Well, considering how infectious this disease is, have you given full consideration to this experimental station that you speak about?—Yes.

5224. And you think that it is worth while running all the risk?—I do, but not if there is the slightest risk to our export trade; if you will have an area, and have a frontier all round it, if you like them, to keep it at a

distance, and the place must be guarded properly. Of course, if an island can be secured, well, there is no question of it, because then you can keep your men at home.

5225. (Mr. Field, M.P.) Could you do it in an aeroplane, I wonder?—Well, I will not risk myself in an aeroplane.

5226. (Mr. Richardson Carr.) Do I understand you to say that you really think it possible that the virus could live in these ditches which have been cleaned out, which have been quoted as a possible source of danger for twenty to thirty years?—I cannot say.

5227. They were not cleaned out for thirty years; do you really think that is within the range of possibility?—In the memory of man can anyone go to these actual facts?

5228. About what?—About the germ living twenty or thirty years.

5229. No. I rather gather you think it might be possible?—I limit my time considerably.

5230. You do not think it could be?—I do not. Well, can any man trace it? That is the thing; trace it.

5231. I rather gather you to say that it was a possible source of danger?—I believe our worthy friend said 30 years; I limit it to two years. I do not contradict the man who said 30 years; I am not in a position to contradict him.

5232. Another thing I want to ask you, if I might, is this—I will not keep the Committee very long: You say you certainly think that the regulations of the Board of Agriculture should not be relaxed in any way?—No, please not.

5233. And if you had your way you would make the area a bit larger?—Yes, I should.

5234. When the Board of Agriculture go down to the farm they take every possible precaution?—I say they do.

5235. And they take every precaution to prevent a spread of this disease which you say is very infectious?—That is so.

5236. Can you, in the face of that, recommend an experimental station, however much it may be guarded, when we realise the fact that when we have one case of foot-and-mouth disease in England every foreign port is closed to us?—Yes; quite so, but not if it would interfere with our export trade. I should then denounce it *in toto*.

5237. When we are trying to eradicate the disease, and if we start breeding this disease in the country, do you not think that every foreign country would close their doors against us?—That is another question entirely.

5238. But it is a very important question?—Oh, I say this, if upon an island just the same—it lies upon the island just the same.

5239. An island in the British Isles? Do you not think we should have our ports closed?—I fear it may.

5240. How can you in the face of that recommend an experimental station?—I do not recommend it. Mr. Bathurst suggested it. I did not recommend it.

5241. I thought you said you recommended it being done under proper supervision?—No. I should have no objection to it personally, but Mr. Bathurst suggested it. He asked me the question.

5242. You would have an objection to it?—I should not personally.

5243. That is just what I asked you. If you have no objection to it you would advise it?—I do personally, but not for the safety of the country.

5244. But we are speaking of the safety of the country?—Oh, certainly not.

5245. Do you or do you not advise an experimental station to be started in the British Isles for the purpose of this foot-and-mouth disease?—No; not for the sake of the country, I do not.

5246. You do not advise it?—I do not advise it; certainly not.

5247. I am sure you are willing to acknowledge it is most contagious. Do you think in the face of that that it would be at all wise to relax the regulation with regard to the importation into this country of live cattle?—Do not, please, do not relax them.

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5248. You are distinctly against it?—Distinctly against it.

5249. I thought I understood you, at the beginning of your evidence, that a veterinary surgeon should be able to diagnose this disease; that it was quite easy to diagnose if he had had instruction on it?—Yes, a veterinary surgeon ought to.

5250. Then why do you not think that sending out these little leaflets, or instructions, would also be productive of good to the farmers of the coun-

try?—Just because farmers are not professionally educated.

5251. But I mean, if they were told certain signs in a simple way that they could determine this disease—if the veterinary surgeon can diagnose the disease with description, do you not think it would be an aid to the farmer to have this?—It may be.

5252. I only wanted to know whether you thought it would be an aid to the farmer?—It may be.

(Chairman.) Thank you, Mr. Barling.

The Witness withdrew.

Mr. HUGH C. SOMERVILLE, of Messrs. Gibson & Co., Ship-owners, Leith, called in and examined.

5253. (Chairman.) You have not sent us a précis, but you have come here to represent Messrs. Gibson & Co., Ship-owners, of Leith, have you not?—Yes.

5254. Where do your steamers run from mostly?—We trade between Leith and Holland and Belgium and the North of France entirely.

5255. Holland and Belgium and the North of France?—Short sea voyage regular line.

5256. And you carry from these countries here a great deal of food-stuffs?—Not a very great deal, but we carry fairly regular shipments of food-stuffs.

5257. Do you carry hides?—Yes, we carry hides.

5258. Dry?—Not dry cattle hides.

5259. What hides do you carry?—We carry wet salted hides, occasionally goat-skins dried.

5260. But you do not carry any dried hides?—Not any dried hides.

5261. What feeding-stuffs do you carry now? Do you carry much grain?—Very little grain; linseed, chaff, and occasionally a little French cake and molassine meal.

5262. Where are these hides stored on board your steamers?—On account of the amount of edible stuffs for human consumption that we carry, we make an almost invariable practice of carrying the wet salted hides on deck only.

5263. On deck?—On deck only.

5264. Is that always the case?—I do not think I ever saw a case where it was not.

5265. You have never seen hides in contact with feeding-stuffs that you carry in the hold?—I have just picked out a few stowage plans as they are made out by the mate for the use of the stevedore, and I could not find it at all in any of them.

5266. But to your knowledge you have never seen hides placed anywhere near other feeding-stuffs on board your ships?—Never; I have never.

5267. As regards hides that are carried on board your ships, they are not disinfected?—I do not know, we just take them as they are.

5268. Where do you bring them to?—To Leith principally.

5269. And when they get to Leith how are they landed?—They are landed on to the quay generally, kept outside of the sheds on account of their smell, and on account of the fact that a little of the brine may leak out of them, and so destroy goods for human consumption.

5270. They are not discharged into lighters, they are brought straight on to the quay?—Straight on to the quay.

5271. And when on the quay they are kept absolutely separate from all other kinds of the merchandise?—From everything else.

5272. These hides are carried on deck, I understand you to say?—Yes.

5273. What do you do when they are taken off the deck, as regards cleaning?—Oh, just wash the deck with the hose.

5274. That is all?—That is all.

5275. Nothing else?—Nothing else.

5276. No disinfection of any kind?—No disinfection.

5277. And are they always carried on deck?—We always carry them on deck. If it was a very large quantity like there comes from some places then you would have to carry them below because the weight

would be too much on deck. But we as a regular line always carry them on deck.

5278. Supposing this Committee was to recommend that disinfection of the holds of the ships was to take place, would you as the representative of a great ship-owning concern see any difficulty in doing that?—Very great difficulty.

5279. You would?—Very great difficulty.

5280. In what way?—In the delay.

5281. In the delay?—Yes. With us, our ships average 24 to 36 hours in port. If we had to disinfect the hold of a ship it would mean that hold would be out of work for 12 hours. In our ordinary work we never have that hold out of work one minute. As the cargo comes out of one end of the hold it is going in at the other, and before the ship is empty, she is half loaded again in our practise.

5282. You say you never carry hides in the hold. There would be no difficulty in disinfecting the deck I suppose?—There would be really no great difficulty in disinfecting the deck but the deck is always considered clear of disease by being washed down with salt water all the time at sea, spray and waves.

5283. (Mr. Lane-Fox, M.P.) You never carry feeding-stuffs on deck I suppose?—Not inwards, no; it always goes down below, I have never seen feeding-stuffs on deck.

5284. (Major Dunne.) You say when you land your hides on wharves that those are quite separate from possible contact with feeding-stuffs?—Oh, yes, because we are afraid of claims, if we put them in contact.

5285. But after the place has been cleared of your wet salted hides, can the cargo from another ship, either a grain ship or something or other, be placed on the same spot?—Not very likely, because we put them outside of the shed; all grain-stuffs are always kept in the shed.

5286. But for instance, cake now, unloaded from another ship, could that be dumped down on the same ground as your wet hides had occupied?—Not much chance of it, because we put the hides outside of the shed where the rain can fall upon them, but no ship-owner would put feeding-stuffs of any nature outside.

5287. Not even temporarily, just in the passage from the ship to the warehouse, they are put on to some vehicle and they go straight into the shed do they?—They would go straight into the shed or straight into the railway wagon.

5288. (Mr. Morrison.) You bring over calves, I understand?—Yes; a regular trade.

5289. In their skins?—In their skins.

5290. Without the head or the feet?—Sometimes they have the feet on.

5291. But not the head?—Not the head; the head is in a basket separate.

5292. Do you carry large quantities of these?—Pretty large quantities. They are shipped from Harlingen as they are; about 2½ to 10 tons of dead calves from abroad every week.

5293. (Mr. Field, M.P.) From where?—Harlingen, in the north of Holland.

5294. (Mr. Morrison.) Is that in Holland?—In Holland, in Friesland.

5295. From 2½ to 10 tons every ship?—From 2½ to 10 tons every ship from that port.

5296. How often do you get a ship from that port?—Once a week.

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[Continued.]

5297. So that every week you are importing 2½ to 10 tons of calves in their skins?—Yes.

5298. Do you get calves from anywhere else?—We do not get calves from anywhere else.

5299. Is that at present?—That is at present, yes.

5300. Is it continued all the year round?—It continues the whole year round.

5301. Do you know what becomes of the missing heads?—They go along with the calves in a basket.

5302. They are delivered in the same shipment?—In the same shipment.

5303. Not on the calves?—No.

5304. Do you know whether there is any inspection of these heads or hoofs on landing?—Well, there is no real inspection at Leith on landing.

5305. What do you mean by "real inspection"?—They are taken and not put on the quay at all; we have special little tables laid out for them.

5306. In the shed?—On the quay. The tables are kept about 18 in. clear of the quay and then the custom-house officials examine them. They are the only people who examine them.

5307. The custom-house officials examine them?—Yes.*

5308. Have they any expert knowledge of disease?—I do not know.

5309. You have no reason to suppose that they have; they are not, for instance, veterinary surgeons by any chance?—No, I do not think so.

5310. Then what do they examine them for?—Just to see that they look all right; to see, as far as they can, that they are free from disease; and then they have their certificate attached to the calves certifying them free from disease.

5311. Are your sanitary inspectors the people who examine them?—The sanitary inspectors do not examine them always.

5312. He occasionally examines them?—Yes.

5313. Does the doctor examine them at all; a medical officer of health?—Not unless he is specially called to come down and see them; he does not make a practice of coming down to see them.

5314. When would he be specially called to see them?—Well, if there was anything that the custom-house officials thought was wrong, or anything specially smelly about them, he would be called.

5315. He would only be called when the person who inspected thought there was something wrong?—Yes.

5316. And the whole object of the examination is from the health point of view?—From the human health point of view.

5317. Do all the calves have labels attached to them?—I do not think every calf. Each mark has, but I do not think each particular calf has. There may be three calves in the lot, and these three calves would have one label.

5318. But the label covers the three?—It is not an individual label.

5319. What does the label mean?—I do not know. It is one of those Government arrangements which is pretty much outside the ken of the shipowner.

5320. You have nothing to do with it, and do not know what it means?—I do not know what it means.

5321. But each consignment at least coming from Holland has that label?—Yes.

5322. Is that every year, or only when the disease is there?—All the year and every year—for a good long time.

5323. Does anyone examine the heads or the hoofs?—I do not know of any special examination being made.

5324. Not even by the Custom House officials?—I do not know of any except just in the ordinary course of their examination.

5325. Are they laid out on the tables?—Well, they are put beside the calves but not opened up; the baskets are not opened up.

5326. Who handles these calves when they are taken away from the quay?—They go straight to the butcher. The butcher comes down and lifts them himself, and puts them into his own meat-van or meat-cart and carts them away.

5327. That same butcher, by-the-by, may go to the auction mart and buy cattle, may he not; that is the kind of man who handles them?—Yes.

5328. So he might go straight from his calves to the auction mart?—He might.

5329. That is the kind of man who handles them?—Yes.

5330. Then besides these calves, do you bring over many ponies?—No ponies. Two or three times a year we have a shipment of Flemish funeral-horses, only the black funeral-horses.

5331. Do you bring over any other material that you think might be a source of danger of foot-and-mouth disease besides hides and the things I have mentioned?—There is the glue-stock for going to the gelatine factory.

5332. That is just the hoofs, I suppose, in the semi-prepared state?—I do not know what it is. It is also carried on deck, but it is a very evil-smelling thing.

5333. You have no knowledge of how that is prepared on the other side?—None at all.

5334. But you have a suspicion that it might be diseased, or bad material, on the other side?—It will not be putrid flesh at all, because then it is of no use for its purpose.

5335. It must not be putrid?—It must not be putrid.

5336. (*Mr. Hinds, M.P.*) Are you of opinion that this disinfection even of the deck would be an inconvenience to you?—I do not think it is necessary. The deck can be easily disinfected just by a wash down.

5337. Do the men who handle these calves and heads go and handle other materials after?—They are the usual dock labourers who discharge them.

5338. They might handle the hides and then go on to another part of the cargo?—They might.

5339. Without any washing?—There will be a little interval of time between them, because these calves are taken off first thing in the morning, about 3 o'clock in the morning; the calves are always discharged first thing.

5340. You have no regulation at all with regard to the men; what they do?—None at all.

5341. (*Mr. Richardson Carr.*) There is only one question: Do you think there will be any objection on the part of shipowners if all hides came over more or less wet or salted?—I do not think there would be any objection.

5342. You do not think there would be any objection raised by shipowners?—No.

5343. If they all came over in a wet condition or salted?—Oh, no.

5344. When horses come over they bring some hay and straw for them to eat, and litter?—Well, there is none landed on the quay.

5345. What happens when anything is over?—It is kept on the ship and used for dunnage.

5346. It is never brought on the shore?—No.

5347. (*Mr. Field, M.P.*) You say these hides are always brought on deck?—We carry them on deck; I only speak for our own firm.

5348. You cannot answer for anyone but yourself; some of us cannot answer for ourselves even. The deck is washed clean always?—It is always washed every morning.

5349. So that in your view there is no necessity to have a disinfectant used?—No, I do not think so.

5350. Well, I agree with you. Now with regard to these calves: Is there a certificate given to what we call a bunch of calves; that is, 2, 3, 5, 10, 15, or 20, whatever it may be—a Government certificate given with them before you take them?—Before they are allowed to be landed in this country and therefore before we take them.

* There is one point in my evidence that is not quite clear and is not strictly correct as it stands. I refer to questions 5307, 5311, 5312, 5313, 5323, 5325, 5358, and 5359. As the matter stands in the copy of my Evidence, it is not clear who examines the carcasses of calves. In practice the Customs Officers examine them, and the officials appointed by the Medical Officer of Health for the burgh. The latter examine practically every shipment arriving in Leith to see whether fit for human consumption.

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[Continued.]

5351. At the other side?—At the other side.

5352. You would not take these calves unless you had that certificate, would you?—We would not; we could not land them otherwise.

5353. You take that as a guarantee that these calves are fit for human food?—Well, of course, we are not strictly certain whether they are fit for human food or not.

5354. But that is the guarantee you obtain for them?—That is a guarantee that is given.

5355. But that has nothing to say as to whether they are probably carriers of animal disease; you do not know that?—No, I do not.

5356. Did this not come in your department?—No.

5357. When they come to this side the butcher comes along and buys them and he takes them away, is not that so?—Yes.

5358. He examines them here—I mean at Leith, not London?—In Leith it is just the Custom House people and the Dock Commission Authorities.

5359. Are they supposed to be sanitary authorities?—The sanitary inspector has his own men always walking round the docks, but he does not go over every cargo in detail at all, and the sanitary inspector and

public health officer does not come down unless he is specially called by one of these officials.

5360. Still you think that this is a fair precaution so far as you can judge?—I do not see that there is the slightest risk because they never go near other cattle.

5361. And the men who lift them in as a rule are the porters and not the butchers themselves that buy the cattle?—Our own dock labourers discharge them from the ship on to the quay.

5362. The dock labourers do that?—The dock labourers do that.

5363. And then when they are on the quay and they are bought by the retail butchers their men lift them into their own carts?—Into their own carts, yes.

5364. (*Chairman.*) There is just one question I want to ask you; it is bearing on that question Mr. Hinds asked you: I understand that your dock labourers bring these hides on to the quay?—Yes.

5365. And then directly after that, without any precautions at all or washing or anything, they go and handle all the foodstuffs?—They handle all the general cargo.

Thank you.

The Witness withdrew.

Mr. RICHARD MORRIS, Farmer, West Hallam, Derbyshire, called in and examined.

5366. (*Chairman.*) You had the disease on your farm at Hallam in Derbyshire last year, had you not?—Yes, sir.

5367. We have had evidence from the Chairman of the Contagious Diseases of Animals Committee of Derbyshire on your outbreak, and we know that, so far as he could tell us, you brought no fresh animals on to your farm for some long time?—No, sir; we breed them, as a rule.

5368. And you had had none for some long time?—No, sir.

5369. And also that there was no suggestion of any of the feeding-stuffs being responsible for the outbreak?—No; we use ox meal and cake, and we had used them before.

5370. There was one thing that Mr. Waite told us that he was not quite satisfied about, and that you were not quite satisfied about. You are a dairy farmer, are you not?—Yes, sir.

5371. And you send your milk up to London in churns?—Yes, sir.

5372. And we understood from him that very often for some long time you were delayed in getting these churns back again?—Yes, sir. I am sorry to say many we never got all; they do not return some of them at all, they get lost altogether. We lost three this winter.

5373. He gave us to understand that the reason why these churns are sometimes not returned to the owner is that they are used for imported milk?—That may be, I could not say; not to my knowledge.

5374. How long have you been without your churns; what was the longest time you have been without them?—We had one come back a fortnight ago that has been gone three months, sir.

5375. Do you send a great deal up to London?—Three churns; that is, about 24 barndoor gallons a day.

5376. Have you ever had disease on your farm before?—Yes, sir; I recollect it twice. I was a little boy when we had it before. We came there from a place called Stanley.

5377. I mean on this particular farm have you ever had foot-and-mouth disease?—Twice before.

5378. How many years before?—It is about 29 years since the last time.

5379. And till 1911 for all these years you had never had any outbreak at all?—No, sir.

5380. And you have no idea, I suppose, in your own mind, as a practical farmer, how this originated on your farm at that time?—None at all. I have noticed it breaks out at the latter end of the year, towards autumn, after a dry season.

5381. You think the dry season had a certain amount to do with it?—Well, I think so; but perhaps I am wrong. It has always been with a dry season in the latter end of the summer, towards September time, but it was very prevalent 29 or 30 years ago. I remember that there was a farm in our neighbourhood I remember once that had it. There was only one farm that had not it.

5382. That is 29 years ago, but we are talking rather of this one in 1911. You have no idea in your own mind, or suspicion in your own mind, I might say, how it came about, except possibly that it might be from the dry season?—I thought probably of the railroad. The line of the Great Northern Railway runs through the centre of the farm.

5383. What had that got to do with it?—I do not know whether it was some hay or straw that might have blown away from the trucks; I could not say. The gentleman was suggesting birds. Where do the swallows go in the winter-time, sir? We get many of those in the cow-sheds; they build with us. They do not go to Holland, do they?

5384. (*Mr. Richardson Carr.*) Only one or two questions. Do you think, in face of the contagious nature of this disease, it would be well to relax the restrictions now placed upon the live cattle coming to this country?—I do not know, I am sure.

5385. Do you think it would be well to run any further risk by letting live cattle come in?—I should say so.

5386. It would be wise to do it?—Oh, no; not wise.

5387. It would be unwise to do it?—Oh, yes.

5388. I think you did hear some of the last evidence. Do you think it would be at all a good thing to start an experimental station where we should be fostering this disease, so to speak, in the British Isles?—I do not think it would. Anyone that has seen the foot-and-mouth disease, it is very easy to diagnose; I could tell it if I saw it a field away. Although our beasts were not affected as they usually are—they have generally their feet affected as well as the mouth—but the feet were not affected for several days, or they would have been slaughtered much sooner. But the disease was stopped six days before any were slaughtered—five or six days—because there were eight isolated beasts. They brought them and put them in the same shed for 48 hours, and they could not get one of these to start.

5389. Are you quite satisfied with the restrictions as they are carried out by the Board of Agriculture?—Yes, sir.

5390. And everything went quite smoothly?—Yes, sir.

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[Continued.]

5391. You would not suggest any alteration at all?—No, sir, not without they could do something stronger.

5392. You would not relax in any case?—No, sir.

5393. You are one who has suffered from the disease, and have been under the regulations of the Board of Agriculture, and you still affirm you certainly would not weaken them?—No, sir.

5394. (*Mr. Field, M.P.*) What reason have you to think that a dry season brings about an outbreak?—Because it has happened to be a dry season when we have had it each time; after a dry season.

5395. But you have not had it for the last 29 years?—No, sir, but it was a dry season; it was after some hot weather then.

5396. But have we not had any dry seasons since the last 29 years?—Oh, yes. We have had some very dry seasons since then, but still, it happened to be in dry seasons when we have had it; after the hot weather.

5397. Have you any idea at all now as to how that foot-and-mouth disease outbreak could have come to you?—I have not the least.

5398. There were no strangers on the farm?—No, sir.

5399. No new cattle imported?—No; we have not had any fresh cattle.

5400. No foreign hay or straw?—No, sir; we never buy anything except artificial manures and cakes and that sort of thing.

5401. What sort of cake had you?—Thorley's cake and Pearson's cotton cake.

5402. You still agree with the restrictions that are enforced at the present time ought to be continued, and if anything made stronger?—Well, I do not agree with that gentleman to extend the area; I think the area is too far now.

5403. You are not an Imperialist in that?—No.

5404. Nor a Little Englander; you think the area is quite big enough?—I do, because it causes people inconvenience for many miles round, and stops everything.

5405. Just one question more. Are you in favour of allowing in foreign cattle?—No, sir.

5406. You are dead against that?—Yes, sir, coming into this country, do you mean?

5407. Yes, coming into this country?—Yes, sir, I am against that.

5408. From any country where foot-and-mouth disease is prevalent?—Yes, sir.

5409. That is the result of your experience of 29 years ago and of later experience?—Yes, sir.

5410. Do you think every possible danger of introducing disease ought to be obviated?—Oh, yes, I do.

5411. (*Mr. Hinds, M.P.*) Did you get any hay or straw at all from the towns?—No, sir, we had a lot to dispose of of my own.

5412. How long did you send this milk to the town after you saw that your cattle were affected?—It went for about three days; I think three or four days; it never went after it was settled we had got it, that it was the foot-and-mouth disease; still, for all that it went not from the affected animals.

5413. None at all went from the affected animals?—No, sir.

5414. You say many cattle farmers were of opinion that this was not the disease your beasts had?—Many of them said I never had it. Even the veterinary surgeons went so far as to say that; but I am satisfied it was the foot-and-mouth disease.

5415. But still you say it is easily diagnosed?—Yes, it was on account of the feet that they did not condemn it. It usually affects the feet as well as the mouth. The second day when it began a farmer asked me if I would go and look at a beast that he had got bad. He said, "Why not?" I said I had two bad. "What does that matter?" I said, "I am afraid it is foot-and-mouth disease I have got. I would rather not go amongst your cattle until I am certain." I called in a veterinary surgeon on the same day, but it was at the time of the railroad strike. I could not get one that night. I waited till the Sunday night and sent a wire and he came. He said: "What do you think?" and I said it looked a suspicious case. I asked him what

he thought about it. "Well," he says, "it does, but I will go back and look it up," and he did, and he said when he got home he thought he had best wire off to the Board of Agriculture, and he said he did, and he brought one of the inspectors down.

5416. Do you think that the Board of Agriculture could do anything in the way of education of the young farmers with regard to this disease: how to diagnose the disease, or to know which is the infectious disease itself?—I am not sure; there are so many of them who will not take any notice. They call me a fool, three-parts of them do, for reporting it.

5417. (*Mr. Field, M.P.*) They were mistaken; do you not think they were?—Oh, I do; but still, if I had not reported it I do not think there would have been any more cases. We had five break out, and there were no more broke out. After this we had a very heavy thunderstorm, and it seemed to stop the disease, and we had no more afterwards.

5418. You have made two suggestions. Can you say anything with regard to these droppings of animals to be treated with carbolic acid; lime would not be strong enough?—I could not say what was strong enough. We carbolicked it three times and lime-washed it three times. Where the animals were slaughtered there happened to be a piece of meat about the size of a walnut. I went in a few days afterwards; I thought it was a hen's egg; I picked it up in the manger in my hand; it all fell to pieces; it was full of fly-blows and maggots, and if it will not destroy those I do not see that it will destroy the foot-and-mouth disease microbes. Those were only fly-blows on this piece of meat, and it had been carbolicked three times and lime-washed three times, and if it will not destroy a fly-blow it will not destroy the microbe.

5419. Did not the Board of Agriculture inspector see all that?—I called Mr. Craigie. I told him about it, but when I picked this up I thought it was an egg; it was coated with lime just the colour of an egg, it all tumbled to pieces, so I could not show it to him. He did not happen to be on the farm just then. And as for the droppings in the field, I think there must be some infection from the infected animals, and that ought to be disinfected. The droppings were in the field and they were not touched at all. Certainly it would be a big job, but I think they are as liable as anything.

5420. What is your suggestion with regard to the isolation of the affected beasts?—I think isolation would be sufficient. Beasts that are isolated away from the others which have not been in contact, I do not think it seems right to slaughter those. We had eight beasts that were isolated, that had not been near the others; they brought these up and put them in the same sheds that the others had been in for 48 hours. Some of them would like to see a case start, but they could not get one to start. They developed the vesicles on the mouth, but they were all broken when the veterinary surgeons got down. That made it rather hard for them to diagnose straightaway. They seemed to get to the height in about 24 hours.

5421. (*Mr. Morrison.*) You say that your neighbours apparently had not approved of your reporting this case?—No, sir; many of them said I should never have reported it.

5422. Do you think that there are any farmers in your neighbourhood who would not have reported the case if they had had it on their farms?—I think it is very probable they would not; without many had broken out I do not think they would report it soon enough.

5423. You think they would keep back the information until the last moment?—I think they would, many of them.

5424. Would that arise, do you think, from their ignorance of the importance of the disease, or from sheer ignorance of its being the disease?—They do not seem to want to be found out if they can help it; they think it is less trouble.

5425. They think it would die out of its own accord and nothing more would be said?—Because foot-and-mouth disease is a matter which only lasts three or four days. In three or four days all the beasts were healthy

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[Continued.]

and well and could graze, when they were slaughtered. I would much prefer foot-and-mouth disease to anthrax any time.

5426. Do you think that the Board would do any good by sending down, especially at times when there is foot-and-mouth disease rampant on the Continent, little pamphlets to be distributed amongst farmers, warning them that it is very important to look out for and report anything. Would that do any good amongst your neighbours?—It might do; I do not know. I am sure.

5427. Would they read such leaflets?—They might read them, but they would soon be thrown away; they would not take much notice of them.

5428. (*Major Dunne.*) How many animals did you have slaughtered as a result of this outbreak?—There were five affected.

5429. I mean killed; slaughtered by order of the Board of Agriculture?—There were 90 slaughtered.

5430. Was that the whole of your stock?—That was at home; there were 22 which happened not to be on the farm, three miles away; they were not slaughtered.

5431. (*Mr. Field, M.P.*) How many were killed—Ninety-odd.

5432. (*Major Dunne.*) Was anything else slaughtered: sheep, or anything of that kind?—They were not affected, but they were slaughtered; the sheep were in the 90. Sheep and pigs and cattle.

5433. Practically the whole of your stock was wiped out?—Yes, sir.

5434. Were you quite satisfied with the compensation you got?—Yes, sir. I was quite satisfied with the compensation I got, and by the officials of the Board of Agriculture I could not have been treated better.

5435. You have no complaint to make or any suggestion to make as regards any alteration of the restrictions?—Yes, sir; many make the mistake of thinking that there is a lot of humbug with officials, but it is quite different; they treated me with respect.

5436. They treated you with full courtesy?—Yes; I was more than satisfied with the officials.

5437. Have you ever brought any town-made manure from the neighbouring town?—No, sir. We get nothing only artificial.

5438. Never?—No, not for many years.

5439. I suppose a good deal of town-made manure does come out on the land in the neighbourhood of Derby?—Yes, there is from Nottingham; not much from Derby.

5440. (*Mr. Lane-Fox, M.P.*) About these churns. You said one was away eight months?—Three months.

5441. What did you find inside when it came back? Was it dirty?—Well, it had probably been used. It was clean, but it had been used; many of these wholesale milk people take them away, and they are always the best of the churns that go. If you have a new churn it is very often kept at hotels and places like that, where the milk has gone.

5442. If there had been any milk in it?—It had been kept somewhere standing in a shop, or something of that kind.

5443. They would not have kept it unless they had wanted to use it?—No, sir; I should say they had been using it.

5444. (*Sir Bowen Bowen-Jones.*) You said you thought eight beasts that were brought up and put with the affected animals could not take the disease, and, therefore, the disease had run its course, and they would not have had it at all?—I do think they would not have had it at all, because we have had it once when only three were affected in the whole herd.

5445. Do you not think that those eight beasts may have had it very slightly?—No, sir.

5446. And they recovered, and they were never noticed to have been affected?—No, sir; there is no mistake when they get it.

5447. I have seen it probably much more than you have?—Well, perhaps, but there is no mistake.

5448. Some of them have it much more severely than others?—You can generally trace it when they have it in the mouth.

5449. You think they had not it anyhow?—I am certain they had not.

5450. Your suggestion about disinfecting the droppings in the field is not acted upon because nature deodorises and disinfects there. I think that is the answer to your proposal. You think, notwithstanding, that it would be wise to disinfect also in the field?—Well, I think if it were knocked well, and spread about and dried, the germs would disappear.

5451. Sun and air, you know?—Yes.

5452. (*Chairman.*) I understood you to say that a great many of your brother farmers round you did not think you had got foot-and-mouth disease?—Yes, sir; and some of the veterinary surgeons went so far as to say we had not it.

5453. Some of the veterinary surgeons? But, still, some of your brother farmers said they thought you had not got it?—Yes, sir.

5454. How would you suggest that the new lot of farmers who have never seen foot-and-mouth disease—how do you think they ought to be instructed about foot-and-mouth disease, so that they should not have these ideas in their heads?—I do not know. They can read about it, but there is nothing like practical experience to see one.

5455. And you think that any leaflet which the Board may send out to stock-owners in this country would be absolutely useless?—I do, because of these patent medicines, the same as foot-and-mouth disease, they give you prescriptions on their pamphlets that they send out, and all these patent medicine people send you a book, and there are illustrations to show you all kinds of diseases.

5456. You say a lot of these veterinary surgeons do not believe you had got foot-and-mouth disease?—No, sir; they said we had not had it.

5457. Had they seen the cases? Had they been on your farm?—No, they had not seen ours, but it was just because the feet had not been affected.

5458. Did you send to your own man first, or did you send to the local authority?—It was not really the man I thought it was. We used to have a man named Alden, and he died just before, and this man had taken his business over, a man named Levy.

5459. Who was he, the local authority veterinary surgeon, or was he your own private veterinary surgeon?—He was my own private veterinary surgeon.

5460. Did he at once say it was foot-and-mouth disease when he came?—He did not say at once, but said it was suspicious, and he would give it a 48 hours' trial, and he left me some medicine.

5461. A 48 hours' trial?—To see what it developed into. He could not tell for the first time of seeing it, but when he got home again he thought it would be best to report it because it looked rather suspicious.

5462. He did at once before the 48 hours had elapsed?—Yes, sir.

5463. Quite right. (*Mr. Morris.*) Thank you; many thanks?—I am sorry I did not get down on Friday; I had not the place or time.

The Witness withdrew.

Mr. JAMES MCPHAIL, M.R.C.V.S., Chief Foodstuffs Inspector of the Corporation of the City and County of Kingston-upon-Hull, and Foodstuffs Inspector to the Hull and Goole Port Sanitary Authority, called and examined.

5464. (*Chairman.*) You are Chief Foods Inspector of the Corporation of the City and County of Kingston-upon-Hull, are you not?—Yes, sir.

5465. And Foods Inspector to the Hull and Goole Port Sanitary Authority?—Yes.

5466. And you have come to give evidence regarding

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the imports into Hull of hides, calves in skins, edible offal, horns, and give us an opinion as to the possible contamination between them and cattle foodstuffs. Now, will you tell us a little about them? Tell us about the hides as they come into Hull?—Well, taking them in the order, the hides are imported in cwts.

5467. Yes, we have got them in your *précis*?—You have got that in the *précis*; you do not need that. Then these hides are landed on to the quayside. Those that come from a distant port, though they are classed as wet hides, are dry as regards moisture running from them. Those that come from near ports are running—the salt water, the brine is running out of the hides.

5468. Are these hides landed straight from the ship on to the quay, or are they landed by lighters?—Straight from the ship on to the quayside.

5469. Is there any special place for the hides?—No, indiscriminately.

5470. Are they adjacent to other foodstuffs at all?—Yes.

5471. They are?—Yes. And foodstuffs laid on top where they have been.

5472. Foodstuffs are laid on top where they have been?—Yes. They are simply landed on to the quay into the shed, then they are taken away and other stuffs are put on top again. The sheds are swept out about once a week. This happens practically all over England, the same thing.

5473. Are these hides then landed by the dock labourers?—They are, and then they go and land anything else where they can get a job.

5474. Then they go to land other things?—They work in gangs. The stevedore employs his men; they land one ship, and they go right off and land another ship; they may be handling cake an hour after they have been handling hides.

5475. Then as regards the landing of these hides, are you not in favour of the disinfection of hides?—No. By disinfection I mean disinfection, I do not mean playing with it. The only way to disinfect a hide is to dip it in the same way as they do sheep. If you are going simply to spray round it and that sort of thing, you might as well not do it at all. It is all right to talk about laboratory methods such as smearing stuff on bits of rags and such processes, but you must take it as it exists in the commercial world; you get wet hides covered over things like that. You are not dealing with a thing in a laboratory that you can play about with as you like.

5476. Your point is that if hides are disinfected they ought to be thoroughly disinfected?—They ought to be thoroughly done, or not at all.

5477. You were not here yesterday afternoon. We had some very important evidence about the disinfection of these hides, and the witness proposed that at the port of embarkation these hides should be placed in a pit and thoroughly soaked for 24 hours to 48 hours with a disinfectant that he told us of?—What was the stuff?

5478. Formic acid and mercuric chloride?—Well, in connection with that you ought to find out what the trade thinks of hides which have been treated with that, because if you are going to put any acid on it, they talk about formalin, you are hardening the tissues—with formalin you will harden the hides. You talk about carbolic acid; well you do not see the effect of carbolic acid on a hide until it is tanned—you can rip it like blotting-paper after it has been tanned.

5479. He told the Committee yesterday that the preparation would not do any damage to the hides at all?—That may be his opinion, but it wants to be proved; that is a thing that must be proved by actual facts.

5480. His preparation has been before some of the authorities, and I believe in some cases it has been approved of?—That is a matter for experiment.

5481. Yes, quite so?—But I think that hides, if they are to be disinfected, should be disinfected properly or not at all.

5482. But I presume that you would approve that if they are to be disinfected they should be disinfected at the port of embarkation rather than at the port of debarkation?—That is so; they ought to be. Hides

should come in wet, not dry absolutely. It is the dry hides. You can bring away any hides you like out of Germany, even although they are infected, as long as they are dry. They can put them out and dry them, and then they can remove them off the farm. That is the way they do in accordance with Section 62 of the German Imperial Law.

5483. Then I think you say in your *précis* that you think all hides should come in with the nose and lips cut out of the head-piece?—I do. I think that Sir Bowen Bowen-Jones, speaking with the last witness, said that some of them were mild cases. Well, I believe that, and I think these mild cases are the ones where you get the trouble, and you get these hides coming in with the nose and lips where the lesions are. These are the ones and they are not noticed. That is what I mean when I say there is always a casual hide turns up, and that is the one that does the damage. And the trade would not object to that because they are paying 6*d.* and 7*d.* a lb. for nose and lips that they have to sell to glue factories at from 3*d.* to 4*d.* a lb. These things are not required at all by the trade. They have the dishorning now, which takes off the horns. You sometimes get this disease at the base of the horn, and they might as well have the nose and lips and have a perfect hide at once even though the hide went up a little bit more in price.

5484. I take it you approve of the suggestion of disinfecting at the port of embarkation and not at the port of debarkation?—As long as it is proper disinfection.

5485. If that were done would there be in your opinion any necessity for disinfecting the holds?—No, none whatever. Put the responsibility and the expense on to those at the other side.

5486. Therefore it would not come on the ship-owners?—No, it would not come on the shipowners.

5487. I see you say the cost of proper disinfection of the holds would be from 5*l.* to 20*l.*?—It would. That is proper disinfection. If they are simply to go round with a brush and water, which is a farce, it will cost practically nothing.

5488. Of course, you understand although our inquiries relate to foot-and-mouth disease, we are also taking anthrax into consideration?—Yes, I know that is very important too.

5489. Therefore your point of proper disinfection at the port of embarkation would mean that it would have to be a strong preparation which would kill not only anthrax but foot-and-mouth disease?—Well, foot-and-mouth disease is said to be easier killed than the other. If you kill the one you kill the other.

5490. Your recommendation as regards hides is that they should be deck cargo?—Yes, absolutely. That is what they ought to be and are not.

5491. As you heard the last witness say, on his line it was mostly deck cargo?—Yes, I heard.

5492. You think that the deck should be disinfected too?—It ought to be, and there is nothing to hinder them sprinkling down chloride of lime and letting it lie there while the men are engaged on other work. They can keep it in a pan, and sprinkle it all over and let it lie for an hour, turn the hose on and turn the steam on from the engine above it, and you will get the place properly disinfected.

5493. As regards that disinfection on the decks, I suppose a strong solution of the same kind of thing would be necessary if the hides had not been disinfected at the port of embarkation?—Yes, that is so if they had not been disinfected.

5494. But if they had been disinfected there, there would be no necessity to disinfect the holds, the decks, or anything?—That is correct.

5495. Now, we will come to the calves in skins?—You notice that the third recommendation I make is a depot for the hides so that they should not be landed indiscriminately. It all qualifies that first statement. If they are disinfected on the other side, then it does not matter where they are landed.

5496. You do not want depots if they are properly disinfected at the port of embarkation?—You do not want it, but under existing conditions they are necessary.

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5497. What about the calves in their skins?—That is a trade that runs up to Easter and then down. Easter is the high-tide time of calves. They run all the year, and up to Easter when we will probably get from 3,000 to 4,000 at Hull landed. We distribute them all round; we are the largest distributing centre in the kingdom.

5498. Of calves in their skins?—Of calves in their skin.

5499. (*Mr. Field, M.P.*) A larger trade than at Leith?—Oh, Leith is not in it with us as regards that trade. We send them all over the country and even to Belfast.

5500. Yes, I know that?—And all over. They come in their skins, they have got their heads on and they have got their feet on.

5501. (*Chairman.*) Where do they mostly come from?—From Harlingen, some from Amsterdam, some from Rotterdam. They all bear an "Official Label." They used to send in calves without a label, but the Netherlands said: "Well, you must not export them," the reason being that if the owners paid a fraction of a penny to get their calves inspected then the calves were labelled with a label with a tag and wire, and a tag on so that they cannot be shifted; and if a calf is condemned by myself the owner at Holland will get the value of his calf on that ticket being sent to the Consul in London who sends it back to the Netherlands Government.

5502. If you condemn it?—They will get the money for it. That is the inducement to have these calves labelled.

5503. Then what inspection is there on the other side. Do they put these labels on to say?—They are fit for food. Simply fit for food, that is all.

5504. But nothing to do with contagious diseases?—Nothing to do with contagious diseases whatever. They pass as fit for food foot-and-mouth diseased carcasses. Yes, they do, and they would pass a calf with it; they would simply take the head off; and even in Germany they simply scald the tongue in boiling water and then use it.

5505. (*Mr. Field, M.P.*) Foot-and-mouth diseased tongues?—Foot-and-mouth diseased tongues, yes. They pass them as fit for food. Ostertag, the greatest authority, says in his book it is waste to destroy the tongue of a foot-and-mouth diseased animal; it simply wants scalding in hot water.

5506. (*Chairman.*) Really no steps are taken at all for disinfecting these animals?—None whatever. You have got the difficulty in disinfecting. You see, suppose you disinfect them with formalin, well you will get the Local Government Board on your track for adding formalin to food; you must not do it, and all these disinfectants have taints. You speak about formalin as evaporating into the air, but it does not; it deposits in a fine film on the carcass or whatever it is used on.

5507. And really you would say these calves in their skins coming in are a great source of infection of foot-and-mouth disease?—I think they are a risk, a distinct risk. You get all these cattle coming into the markets there from all places. You know how they work them there. They have pens like these alleyways, for the cattle there travel up that area; say there is a veterinary surgeon standing there. He looks at the foot, another man opens the mouth, and then the animals go into the slaughter-house; that is the way they check the disease over there.

5508. Where is this?—In Holland. Then there are the bobby-calves, which are calves other than fed calves. They also come in their skin. You see it is difficult to stop their coming in skin, because people want blown veal. Some of these calves would look abominable if they were not blown up with the machine; horrible looking stuff. Some have their heads on and some are in skin. They are not fat calves.

5509. (*Mr. Field, M.P.*) Staggering Bob?—Some of them are called Staggering Bob and local terms. They are called bobby-calves. Their heads also come in boxes, large cases bigger than this table, and you have all the offal in and the heads in, and a division in

between. Sometimes the heads are thrown on top of the offal. We also get ox livers and kidneys, and various other offal. The boxes are all sealed with a label like that. And we examine them. We have a standing request to the Collector of Customs to detain all the offal. We examine it all, and we seize any amount of it. There is a point in connection with it that I objected to. They were using—a couple of years ago—riverice. They collect it and store it, and at that time they were putting it on top of this offal, and it was thawing out, and there were leaves, straw, and all abominations on top of this offal, so we simply condemned it, and told them if they sent any more it would also be condemned, so they stopped sending it. I do not know what they do at other ports.

5510. (*Chairman.*) Have you any suggestion to make as regards this offal, and these calves in their skins, to help us at all as regards the danger of bringing in disease? Have you got any suggestion to make?—I cannot on these calves in their skins, unless the Board of Agriculture requested the Government on the other side, the Netherlands Government, to include in their certificate that they were from a disease-free area. You get these calves coming down from Holland, right away up on the centre; they come down on scows, these flat boats containing all sorts of vegetables and stuff like that, coming down to the ports, and the calves are lying there with their feet tied up on these scows. Well, they might be bringing it, they might be lying on infected material, and then you get the hides all infected too.

5511. I am afraid that it would be impossible for the Netherlands Government to give that guarantee, considering, as you have heard this morning, that Holland is one mass of disease, and given up all idea of stamping it out?—Then you are up against a dead end as regards that, unless you say: "Well, you have got to send the calves in without heads on," that is all.

5512. Now as to imported horns?—These are landed in bags on the quay side, the same as in the case of skins.

5513. And bones the same, I suppose?—And bones the same.

5514. Of course they could be disinfected?—Oh, yes.

5515. At the port of embarkation the same as hides?—Yes, and they ought to be.

5516. They ought to be?—They ought to be, very much so, because they do not talk much about it; but you do get this foot-and-mouth disease on the horns, at the bottom of the horns. You get little blebs at the bottom of the horns.

5517. What about these other things, vegetables, potatoes, imports of green?—They come in all the year round. They are practically onions, potatoes, cauliflowers, cabbages, radishes, carrots, turnips, lettuces from Belgium and France, Germany and Holland. The lettuces come in little open crates, about half the length of the table, and we get a tremendous amount of fruit, in anything from 20,000 to 30,000 baskets of deck cargo, all deck cargo sheeted up.

5518. Well, then, as regards potatoes and grain; there is no question of disinfecting them?—No, you cannot disinfect these vegetables.

5519. No, it is impossible; there is always a certain amount of risk about that?—Yes.

5520. I see you say a danger in connection with the above is from buffum, the dust of grain mills and cotton-seed mills which is used in the preparation of knackery manure?—Yes.

5521. I do not quite understand what is "knackery manure"?—Knackery manure consists of old cows, dead cows and horses, etc., that are sent to the knackery. That is made up into manure for the land, digested down, mixed with what they call buffum; it goes on to the land as manure. It is a very valuable manure. I should think they would get from 10l. to 15l. per ton for it.

5522. (*Mr. Hinds, M.P.*) It comes to England?—Oh, it comes to England, yes, all over. This buffum is the fluff of cotton seed and also the winnowings from grain. I tried to get you a sample of it, but the man at Hull stopped using this fluffy buffum because

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it had gone on fire and nearly burned his place down, and he is now using just the winnowings from grain mills. But buffum is used in other places, quite a fluffy thing, and if you have seen cotton-seed you know what it is.

5523. (*Chairman.*) Going back once more before I have finished as regards these hides, do you think the shippers would make any objection if it were suggested that they should always carry these hides on deck?—I do not think so.

5524. You do not?—No.

5525. They would be able to carry the same quantity as they do now?—Yes.

(*Mr. Field, M.P.*) As a rule they are mostly put on deck.

(*Chairman.*) No, I am afraid from the evidence we have got it is mostly carried in the hold. To-day is the first time as I recollect we heard they carry them on the decks of ships.

(*Mr. Field, M.P.*) That is the short journey.

5526. (*Chairman.*) But, anyhow, be it short or be it long, you do not think from your knowledge of the shippers in Hull that there would be any objection on their part to an order to carry them all on deck?—No. But, excuse me, there is another thing in connection with this stoppage of foreign hay.

5527. Oh, yes, I beg your pardon, I forgot that Bill?—I think there are landed between 20 and 30 tons of so-called linseed husks from Harlingen and Rotterdam. These linseed husks which are used for cattle food: it seems to me a little off to stop foreign hay and let this stuff come in.

5528. Linseed husks?—Yes, here it is. I have brought this sample. There is any amount of hay in that (*showing sample*).

5529. Does that come in in large quantities?—It does. It comes in to Leith and all over. We get 20 to 30 tons a week. That was in bags, and draining on to the bottom of the bags was all the stuff out of the hides and out of these boxes containing the offal. That was actually standing among it.

5530. There was a report you said?—Yes. I asked one of my assistants to follow that up. He inquired of a hay and straw merchant who happened to have this linseed chaff, which is imported in bags from Harlingen and Rotterdam, Holland. He says: "Between 20 and 30 tons per week. The bags were placed on rail and forwarded to Leeds, Bradford, and other West Riding cities, also occasionally to Sheffield. The hay and straw merchants in the above cities dispose of the linseed chaff to dairymen and cattle dealers for cattle food. The chaff is supposed to assist in promoting a plentiful supply of milk."

5531. Do you know if this stuff comes in? It is the first I have heard of it personally—to any other port except Hull?—It comes into Leith; it will come into Harwich.

5532. Harwich?—Yes, I am sure of it; they do not look for it.

5533. (*Mr. Morrison.*) They have been offered that in the Fife market?—It has come in all over.

5534. (*Chairman.*) All over the ports?—Yes. They do not look for it; they stop one thing and let another thing which is equally bad in.

5535. (*Mr. Field, M.P.*) This comes from the infected areas?—That comes from the south of Holland, any amount of it, and there is a lot of hay in it.

5536. If they stop hay?—They ought to stop this.

5537. (*Chairman.*) They stop hay and straw and they allow this, which comes from infected areas?—Yes. It goes straight to feed cattle.

5538. (*Mr. Richardson Carr.*) That is for feeding cattle for dairy purposes?—Yes, for dairy purposes. It is a legal question whether they should not stop the hay in that, if they are breaking the restrictions in bringing that in, for that contains a large percentage of hay. There is another thing, we get some Ptarmigan poultry across. They go to Retford, and this is their food which also comes across; they send this over too (*showing sample*).

5539. (*Chairman.*) Quite right, Mr. McPhail, I am very glad you did?—That goes to some gentleman, probably to be turned loose.

5540. (*Mr. Richardson Carr.*) That goes where did you say?—To Retford to a gentleman who goes in for these birds, I suppose.

5541. (*Chairman.*) Is there much importation of these?—No.

5542. Is there much importation of this stuff?—No that simply accompanies the birds.

5543. That means for their food?—Yes.

5544. Have you got any report on that?—No. I read the first day's evidence, when they were talking about birds, so I brought that up. We also get sunflower seeds, which is a new development from Russia for making oil; that is quite new.

5545. (*Mr. Field, M.P.*) Much of that?—Yes. It is just coming in; it is a new cake that is coming on.

5546. (*Chairman.*) Is there much brought in as yet?—No, not as yet. I may say that we had an outbreak of anthrax; they sent a fine carcass into Hull and I seized it for anthrax. We took possession of this carcass, and I was speaking to the man who owned it, and he said he had put this new cake on to the farm but he had not been feeding his animals with it, but anthrax broke out all the same.

5547. (*Mr. Field, M.P.*) He put this cake on to the farm but he had not been giving it to the animals?—He had not been giving it to the animals, but he got anthrax. There was anthrax there.

5548. (*Sir Bowen Bowen-Jones.*) Would you forbid the exportation of dry hides?—I think the trouble comes from dry hides.

5549. Do you think it would be practicable; would it interfere too much with trade—a recommendation from this Committee?—I do not think so. The hides will travel as far as you like in salt.

5550. How about India and Oriental countries and the East. All comers buy hides?—Well it might there.

5551. (*Mr. Field, M.P.*) They tax salt?—You cannot get much there. In some of these instances it would simply stop trade, but you had better stop trade than have an outbreak of disease.

5552. (*Sir Bowen Bowen-Jones.*) If the hides were properly disinfected it would be perfectly immaterial whether they carried them in the holds or on the deck?—That is so.

5553. If the calves' heads are left on, could you detect foot-and-mouth disease in a dead calf?—Yes, but it is never looked at; it is never examined for that.

5554. I see you are a member of the College of Veterinary Surgeons?—Yes.

5555. But you are acting, I suppose, as Medical Officer of Health at this port?—No. I am food inspector and inspector of nuisances. They had a big scandal in Hull about food inspections—Mr. Field may know about it—and they appointed me to the place and it is going on all right.

5556. It is your duty to inspect these calves and see if they are healthy for human food or to detect disease like foot-and-mouth disease coming into the country?—I have to examine them simply for food. If I find an infectious disease or contagious disease I notify the police. All the cases of anthrax in Hull since I came eight years ago which have been reported to the Board of Agriculture I have reported to the police. It is not part of my duty, but I do it as a fact.

5557. But Hull is fortunate and the farmers are fortunate in having that arrangement carried out; I do not think it prevails elsewhere?—Yes; it does not prevail at all anywhere else.

5558. And do you think it would be a good thing to have a food inspection at these ports where these calves are imported for the purpose of detecting disease?—I do; I think it is an imperative necessity. I may say, sir, that if it is considered important that a veterinary surgeon should examine all screw horses going to Holland, I think it is very much more a necessity that a veterinary surgeon should examine for disease coming from the other side.

5559. Well, supposing your suggestion were carried out that no calves should be imported without a certificate, that they do come from a place free from disease on the other side?—Or have been inspected for this specific disease.

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5560. On the other side?—On the other side.

5561. And in addition to that we had inspections such as this at Hull on this side, do you think that would be a fairly strong safeguard for the prevention of the introduction of disease into this country?—I think it is as complete as you could make it.

5562. Then on one other point I should like to ask you a question, and that is with regard to this knacker's manure. Do the acids used in the preparation of that manure destroy the germs of any disease that might be in the meat, anthrax, we will say, or foot-and-mouth disease?—They are supposed to do; they are crude vitriol.

5563. Crude vitriol?—Crude vitriol, and it is supposed to do, but, as that farmer pointed out, you have no certainty that it is going over all the area involved.

5564. (Mr. Morrison.) You advocate the carrying of the hides on deck in every case?—Yes.

5565. Would that be quite a practicable thing in connection with dry hides?—I was thinking more of the wet hides when I was speaking of the deck cargo. If you are going to bring wet hides from India they are almost certain to be in connection with the cargo in the hold; you could not get deck cargo then, but when I was speaking of hides I meant the wet hides.

5566. But the dry hides are really the dangerous hides?—Yes. You do not get infection playing about like a halo round a hide. It is these dry ones where the trouble is; there is no doubt about it.

5567. You mentioned that at Hull the calves in their skins have their heads on?—Yes, they have.

5568. But they have not at Leith apparently, not in every case. We had evidence this forenoon that that was not so at Leith. Why was that?—Well, I do not want to criticise other evidence. A shipowner does not pay particular attention to a thing like that. I am only surprised to hear it.

5569. You do not quite accept it without further evidence, as it were?—No. I would expect them to have, as Mr. Field knows as a butcher, they want their heads on for fleshing on a calf, and all the calves we have sent away from Hull, fat calves, go with their heads on.

5570. What age are these calves that come over in their skins?—Now you are asking something. This is one of the most deceiving things there is—Dutch calves. I have myself seen calves which you would say had not been a day on the ground, nearly sink calves, and yet these calves have travelled in these scows down country. We got some calves in Hull, and I told them I did not quite like the look of them, and I wanted them to leave on one foot so that I could see if it had the yellow slipper on, to see the foot had hardened, and on the other side they take an iron and burn them so it was not much use in that way.

5571. They come to you with their hoofs on?—Their feet off on the bobby-calves, and their feet on on the fat calves.

5572. It is not part of your business to look at these calves to see if they have got any symptoms of having had foot-and-mouth disease?—No.

5573. But they would be quite old enough to have developed the disease in many cases?—Yes, distinctly so.

5574. I did not quite catch—you described, it seemed to me, a system of inspection on the other side where the calves had their mouths opened and their feet examined just before they were slaughtered?—No, cattle in all markets in Holland are examined as they come in.

5575. But calves have no food inspection whatever on the other side?—This is food inspection; they inspect them for food.

5576. On the other side, of course?—Yes.

5577. But they do not examine them for disease, I mean to say, for such diseases that would be dangerous to us, although it might not disqualify them from being food. What I mean is this, it would be possible for the inspector to pass a calf because it seemed to be quite good for food although he saw that it might have just begun to be subject to foot-and-mouth disease?—They pass as fit for food foot-and-mouth diseased car-

cases, so that he would simply be acting up to his duty by passing them. It is like tubercle in cattle and pigs. There are hundreds of tons of good stuff seized as unfit for food in this country.

5578. (Mr. Field, M.P.) Wasted?—Yes, wasted.

5579. (Mr. Morrison.) Do you think that if a system of food inspection were instituted on the other side that the certificate would be quite reliable from your experience of the other side and what they do?—I will quote you a report from the minutes of the Hull and Goole Port Sanitary Authority: "On 19th March I inspected the meat landed *ex ss.* 'Jervaulx Abbey,' Rotterdam. One consignment was a case of 24 calves (the case was labelled), but surrounded by calves were the carcasses of four pigs (unlabelled). One carcass of a pig was tuberculous and had the glands of the neck removed. One pig was badly affected with peritonitis. One pig had the vertebrae badly formed and was dropsical. These three pigs were seized under the Unsound Food Regulations." How did they get them in after the label was put on?

5580. (Mr. Field, M.P.) They wanted to send you specimens of the diseases, I suppose?—Well, they were labelled. That is the label.

5581. (Mr. Morrison.) Have you frequent experience of that sort of thing?—Yes. Here is another one. "I might instance that out of 10 plucks *ex ss.* 'Whitby Abbey' (Rotterdam), 6 livers were seized; also out of a consignment of 20 plucks *ex ss.* 'Rievaulx Abbey,' 7 pig livers, 1 pig pluck, and 1 calf liver were seized (all of these under Government label as fit for food)." They send over to us at Hull in cases of offal, offal which comes out of little calves which they will not pass on the other side and which they bone up and send into Belgium. They send the offal to us and we gather it in. We get a lot of it. I have had a consignment of 100 plucks and I have taken 99 as unfit for food, packed with worms and other parasites.

5582. (Mr. Field, M.P.) Flukes?—Flukes, and tapeworms and various things, and these had the label on "fit for food."

5583. (Mr. Morrison.) Then, judging from your experience I may take it that you would not expect that a certificate got on the other side in the same way as these labels now are got could be depended upon as a sufficient safeguard?—They have a different standard to us.

5584. Would you advocate then that such work might be done by Englishmen?—Rather.

5585. You would advocate that strongly?—Rely on your own kind.

5586. You think that is the only means of getting it efficiently done?—I do, or send over some Englishman who knows what he is doing and show them what we want, and then ask the Vice-Consuls to certify this is done as pointed out by your Board of Agriculture man.

5587. How many calves, can you give me a notion, come in to Hull in a year?—I have got it here, 11,137.

5588. (Mr. Field, M.P.) Was that last year, please?—Yes, sir, a week to-day there was nearly a thousand came on the boat. It runs up well over between three and four thousand before Good Friday. We send them all over the country.

5589. It depends on the season?—It runs up to Easter and then it runs down again, and then the pigs begin.

5590. (Mr. Morrison.) If these are sent all over the country I suppose they are sent in trucks?—They are.

5591. In wagons?—In wagons.

5592. Are the skins in contact with the wagons or are they in bags?—No. You send the calf away in its own skin, and that is the way in which the butchers who are dealing in that traffic want the calves with their skins on because it saves them package. It keeps them clean and they are put on to lorries first, then they are taken to the various railway stations and dispatched in wagons.

5593. Do you know if any disinfection takes place?—None whatever.

5594. You are certain no disinfection takes place? I know it does not

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[Continued.]

5595. In the case of live animals being taken by rail there is disinfection?—Yes; there is lime.

5596. Not in the case of the dead animal?—Yes; but then they are in cattle trucks, which are different from wagons.

5597. After these calves are taken out of the wagons, I suppose you might have a consignment of cake sent along?—Oh, yes.

5598. Do you consider that a source of danger?—I do.

5599. A great source?—I do; I think that is the origin of it.

5600. Would you advocate anything, then, to combat that danger?—You can much easier handle the disinfection of these wagons and lorries than you can the hold of a ship, because you can get at them. In a ship you have got your ventilators to batten down, and your bilge sounding apparatus to look at, and with a cart you can just as easily disinfect it as they do in connection with the Swine Fever Order at a sale at a market.

5601. Would there be some difficulty in disinfecting a railway truck leaving smell or something behind, that perhaps would come off on the cake, the feeding-stuffs. What disinfection would you recommend now for a railway wagon?—Hot water and soap and a good brush.

5602. Do you have any milk coming in?—Yes.

5603. Fresh milk?—Dry.

5604. No source of danger there of course?—Oh, no.

5605. Do you bring a considerable quantity of feeding-stuffs?—Oh, any amount.

5606. Do you think they come into the dangerous vicinity of hides or possible infected material?—They are all mixed up.

5607. In the ships?—Yes.

5608. Do you mean to say that the feeding-stuffs and the hides would be in the same hold?—Yes.

5609. Would they be in contact?—They might be.

5610. You have seen them in contact?—I have.

5611. Frequently?—Well, just what I said in connection with the shipowner applies to me. You are not looking for them to notice things, and you cannot give data for them. I have seen the hides rolling out of the same hold as stuff for human food had come out of, and other stuff, too, and this stuff that I gave you a sample of, that linseed husk, was standing in among a lot. All these bags were actually standing in the drainage from cases of offal and hides and all that sort of thing; the bottoms were soaked with it.

5612. And I suppose people handling the hides might at once handle some feeding-stuffs without any change of clothing?—Yes, they do. They have only one suit and one shirt; they cannot change.

5613. And no disinfectant?—You cannot disinfect them; they would need to stop in bed.

5614. No soap and water?—They could not disinfect their clothes; they have nothing, they would have to go about naked.

5615. (*Mr. Richardson Carr.*) I was not quite sure whether I understood from you that there are some calves that come over from abroad that have had foot-and-mouth disease but have had their tongues scalded?—No. I say that an inspector on the Continent, if he had to deal with a carcase which was affected with foot-and-mouth disease, would pass the carcase as fit for food.

5616. He would do so?—He would do so.

5617. You said something about scalding the tongues?—I say the tongue which actually contains the lesion of the disease is recommended by Ostertag, who is one of their greatest authorities, to be scalded and used for human consumption.

5618. You think that the bringing over of these calves in their skins is a source of danger?—I do.

5619. Would it hinder the trade very much if they came over without skins?—Very much indeed.

5620. It would?—It would.

5621. And although this is not the department you are giving evidence on, still, as you are a veterinary surgeon, I should like to ask you two questions if I may. In face of the contagious nature of the disease,

do you think it would be wise for the Board of Agriculture to withdraw the restrictions for admitting live cattle?—We could do with them, badly.

5622. Do you think it would be wise to let them in as you say that all these other things are great sources of danger. I am speaking from infected countries?—Oh, that is right; from an infected country they should not be allowed in.

5623. I am only speaking from infected countries?—No, they should not.

5624. It has been suggested to the Committee that we ought to start an experimental station in England?—No.

5625. For research. Do you think it would be wise to do that?—No, start it somewhere else.

5626. Not in the British Isles?—Nothing connected with Great Britain; start it somewhere else; it is badly needed.

5627. (*Mr. Field, M.P.*) But you would not suggest it being started anywhere in Great Britain?—No.

5628. I do not know whether you heard the evidence we had yesterday about the hides generally being subjected in these infected countries to a solution of mercuric chloride and dipped in pits?—No, I did not hear that.

5629. That suggestion was made to us as an effective disinfectant, and it might be easily carried out; would you agree with that?—Yes, if it were strong enough; corrosive sublimate is one of the strongest things there is.

5630. We will not go into the strength of that?—You are dealing with corrosive sublimate, what is going to be the effect on hides?

5631. This gentleman is quite satisfied it would not hurt the hides, and have advantages both to the buyer and the seller. Well now, with regard to calves which apparently is one of the greatest obstacles we have, although they give us a certificate, that certificate only covers the fact that they are supposed to be fit for human food?—That is so.

5632. It does not touch anything in the nature of contagious animal diseases at all?—No.

5633. Then if a calf is confiscated on this side, you produce the label and the tag and the owner gets compensated?—Correct.

5634. Also we had something of that kind in tuberculosis here?—I agree with you.

5635. But we are not on that matter now; that is really the main reason why these exporters submit themselves to that?—That is so.

5636. Would you approve of the suggestion that they should give us a certificate that it is from a free area from disease?—A free area, or that the calf itself was not affected with the disease, which is simply increasing their inspection.

5637. Would not that be very difficult in Holland just at the present time?—Yes, it would be.

5638. It would be very difficult?—Yes, it would be.

5639. Or if the skins were altogether taken off the calf, would that meet your view?—I think it would undoubtedly do away with a grave risk; but it would simply ruin the trade.

5640. I agree, because they would all have to be put in separate baskets, and the expense would be so great that it would leave no profit. There is not a sufficient margin to cover that additional expense?—There is not a sufficient margin to cover that additional expense; that is so.

5641. You are strongly of opinion that a member of the veterinary profession should be the inspector in all these cases, and not what are called ordinary inspectors, ordinary sanitary inspectors. Sometimes they are haymakers, sometimes they are gardeners, sometimes they are men of no profession at all. You are strongly of opinion that we ought to have a member of the veterinary profession?—I am.

5642. Well, I agree with you entirely. Now, with regard to hay; is there much hay comes under your notice?—There is no hay just now, because you cannot get it in.

5643. It is not exactly in your line, I quite agree, but in regard to packing other articles of commerce does it come much under your purview?—Much.

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5644. There is a great deal of it comes?—Yes; hay and straw.

5645. You heard some of the evidence given by the second last witness with regard to hay; you agree with that, do you?—I say that hay and straw comes in in the packages.

5646. And you agree that it is a great medium for carrying infectivity?—I know it gets the blame of it.

5647. Does it strike you as being peculiar that we should place an embargo on hay and allow these linseed husks to come in, which go direct to feed the cattle, which come from an infective area?—I have thought so all along; that is the way I brought it up.

5648. Would you make a suggestion to the Committee that we should suggest in our recommendations that there should be an embargo placed on these linseed husks?—I think that is more important than the hay, to stop that stuff. The horses do not get foot-and-mouth disease readily.

5649. The reason you think it of more importance is because these linseed husks practically go direct to the cattle to feed them?—That is so.

5650. Whereas in the case of the hay, as the hay for feeding is stopped, the hay that comes in as packing stuff does not find its way, so much at least, to the cattle?—No; it does not.

5651. Now, I only want to ask one or two questions more. Have you any idea in the minds of the veterinary profession, as to how it would ensure co-operation on the other side with regard to such regulations as might safeguard us from the possibility of the entrance of disease?—I do not think there would be much difficulty in securing co-operation, provided you accepted the certificate given by them in its entirety.

5652. Yes, but you have given us evidence with regard to a certain certificate where things were smuggled, at any rate in the boxes?—Yes. Well, we get a lot of stuff, and I have been challenged by some of them for stopping it and having a look at it. I say our justification is in what we get. They say you ought to accept the certificate, and if you go to some of the other Governments and say we want you to put this on that it is free from disease; they say, "Very well, we will meet you that way, but you are to accept that, and let them go right in. We are not going to have men like those at Hull and other places raking over the stuff and saying we have not been doing what we said we were."

5653. That is to say, the other Governments want you practically to be a dead-head; is that not it?—Yes.

5654. You are only to be an ornament?—That is what it would amount to.

5655. You have no other suggestion to make to us as to a practicable way of ensuring co-operation between all the Governments in Europe, whereby a common action might be taken so as to safeguard this country and themselves as far as possible from the spread of disease through these infective channels?—You are asking a country which is practically rotten to come in with you who have got practically no disease, and I do not see how you could arrange it.

5656. But would it not be for their benefit as well as ours if they could get shot of it?—Yes, but they do not seem to be able to do it. They have difficulties which we have not got, intense difficulties.

5657. There is the financial difficulty, of course?—That is the main one.

5658. There is only one other question that I want to ask you. As a member of the veterinary profession, would you agree with the suggestion, which I understand is to be made by the next witness, that we should remove the restrictions from countries in which infected cattle are supposed—I will put it mildly—to exist. You would not agree to allow these cattle in?—No. I think if they have got foot-and-mouth disease you ought to keep them out absolutely.

5659. Although it is a great loss to this country?—I know as well as you do, Mr. Field, how they want these store cattle in, and we can do with them badly; but it is not good enough to risk the whole national stock for one trade or one people.

5660. (Major Dunne.) As regards these calves in their skins, is there any very great likelihood of these calves coming into contact with our own live cattle?—Oh, yes. We will take Hull, for instance. They go to the Neptune Street station, that is on the Hull and Barnsley line, to go into the Midlands. These lorries go across the very path where our store cattle come into the market; they pass the market, and if there is any drainage there, they walk among it. Then you get the butchers. They go and take delivery of their calves on the Monday morning, and they go straight to their market without their boots being cleaned or anything. Straight away to the market.

5661. So, for instance, if animals are brought into the market from the country and are not sold and then returned, of course to their own farms, by the means that you suggest now these animals could carry the infection back on to their own farms?—Yes.

5662. If the animals were sold and killed by the butcher there would not be any very great risk?—No.

5663. As regards the carriage of these calves after they have been disembarked, are they carried by the railway people, or are they carried by the butchers in their own carts?—By the butchers in their own carts. They are laid down on the shed and under the sheds. They lay down sacking; for their own sakes they try to be as clean as they can, and the butcher comes down with his lorry and puts them on and takes them to his slaughter-house—they have private slaughter-houses in Hull—and they hang them up there and they send them all over the country. Others are sent in crates to Sheffield off the ships, simply with an electric crane. They are taken off the ship on to the truck and away they go.

5664. (Mr. Field, M.P.) Some of them go in baskets?—Yes, they go to Belfast.

5665. (Major Dunne.) Just one word about the quays. I think the witness we have had from Leith this morning told us there was very little probability of any of these calves in their skins being put upon the actual portion of the quay upon which other cargo might be disembarked, such as feeding stuffs; but in your experience that is not the case?—Yes, and I think my experience is the right one as regards that. I am telling you what happens.

5666. What happens at Hull?—What actually happens, and at other places; I have seen it.

5667. Your point of view is that they have a distinct chance of infection simply from the contact of two different sorts of things being placed upon the same portion of the quay?—I do, and I do not see how you can avoid it in the rush.

5668. I suppose the quays could be washed down?—Oh, the quays could be washed down, but they never are. They are simply brushed down on the Saturday night, made right for Sunday morning, sometimes not that if they are busy.

5669. (Mr. Hinds, M.P.) Would it not be a great hardship if these labourers that do the unloading of these ships should be regulated with regard to handling hides, and then going on to something else?—You could make the shipping company provide them with overalls.

5670. It would not be a great hardship?—It would be a great hardship to make the men provide them, the actual dock labourer, and it would be cruel; he has not got the money.

5671. But do you think it ought to be done from what you have observed in the unloading of these boats?—I think for the men's own sake they ought to have clothes and overalls, but you cannot put it on to the dock labourers, because they have no money. You will get another strike if you do that.

5672. To sum up, do you think there is a great deal in a better system of disinfection?—Yes, proper disinfection.

5673. Proper disinfection all round?—Yes, and that ought to be verified by direct experiment on the hides as they come in.

5674. (Mr. Field, M.P.) Direct experiment?—Yes, on the hides.

5675. (Mr. Richardson Carr.) To see what effect it has upon the hides?—Yes.

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5676. (*Mr. Field, M.P.*) That is on the money value of the hides?—Yes.

5677. And how it would affect their manufacture afterwards?—Yes.

5678. And therefore their sale?—Yes.

5679. (*Mr. Hinds, M.P.*) You think that the employers should be made to supply these men with the overalls?—I do.

5680. With regard to imports, regulations with regard to the disease imported from Continental places, you think that is practicable?—I do.

5681. (*Chairman.*) Going back to this linseed husk, you say 20 or 30 tons are landed every week in Hull?—Yes.

5682. Do you know of your own knowledge is there much landed at other ports?—Yes.

5683. You say at Harwich and at Leith?—Yes, I know Leith is correct; I know that actually exists at Leith, and the probability is at Harwich too.

5684. And in most of the ports?—Yes.

5685. So really, as matter-of-fact, what is landed is 20 or 30 tons weekly at Hull—a great deal more is landed at the other ports?—Yes.

5686. Then as regards this disinfectant: In the evidence we had yesterday, which I mentioned to you just now, the gentleman proposed that in these pits there should be a mercury of chloride and formic acid mixture in about one to a thousand or one to five thousand, which would do no damage and which would completely kill all the spores of anthrax and foot-and-mouth disease, and also would be of no harm to the leather itself?—I do not think you are right in accepting that unless you have proper experiments.

(*Mr. Field, M.P.*) We have not accepted it, the statement was made to us.

5687. (*Chairman.*) The statement was made to us; yes. As Mr. Richardson Carr says, he showed us some leather which had been done by the experiment?—Yes, but you ought not to accept any system of disinfection without others of the same trade giving their opinion on it. Take in Hull, for instance, Holmes, who are celebrated for their split hides, for the colour of them; and when I was coming up here I went to see this man, and I told him I thought it was no use coming up here talking unless I had data to give you, and he said even a piece of lime, one lump of lime, on his hide, will go right through it; and he said the suspicion of an acid ruins his hides and you can tear them like paper; and he was very strong on this disinfection.

5688. (*Sir Bowen Bowen-Jones.*) This was done before splitting?—But this was done in the process of

tanning. They are tanned before they are split. They run them in with a saw and cut them.

5689. (*Chairman.*) I may say in justice to the witness who gave us this evidence that his preparation has been put before three of the public Government offices to consider?—Yes, Government offices are all right, you know.

5690. I am reminded also by members of the Committee that some of these private firms have already adopted it?—If they have done that, that answers practically any objection.

5691. But what I wanted to get from you was, supposing that was done over there, that would do away with all the disinfection on this side as regards hides and bones?—Yes, it would.

5692. If it were done on the other side?—Yes, it would.

5693. One other word about the calves in their skins. We do not seem to get any further as regards what we are to recommend as regards them. Do I understand you to say that if we could have an inspection on the other side that would be the best thing?—Yes.

5694. But, then, you are not very willing—I will not say to trust—but to be guided by the opinion on the other side?—You are bound to be if you make an arrangement with them.

5695. Yes, I know?—I know what we get.

5696. You are not quite happy in your own mind about it?—I am not quite happy in my own mind at all as regards that.

5697. Supposing we had our own inspector on the other side, would that meet it?—Let the Board of Agriculture's inspector first know what is required for the trade; find out that, and then go across and tell them what we want.

5698. Yes; but to keep our own inspector on this side do you mean?—Not necessarily at all for what we want, and then get our Vice-Consul to certify that it has been done. There is nothing to hinder them; we have to do the same thing for our hides to America.

5699. May I ask what is done to the hides which go to America?—They are disinfected, and the Vice-Consul is there.

5700. Are they disinfected here?—Yes.

5701. How are they disinfected?—Carbolic acid sprayed on them.

5702. Do you call that thorough disinfection?—Well, the Vice-Consul might see these notes.

Thank you, Mr. McPhail; many thanks.

The Witness withdrew

Mr. JAMES CROWHURST, F.R.C.V.S., Veterinary Infirmary, Iron Bar Lane, Canterbury, of the Canterbury Farmers' Club, called in and examined.

5703. (*Chairman.*) Mr. Crowhurst, you are of the Veterinary Infirmary, Iron Bar Lane, Canterbury, and you are going to give us evidence to-day on behalf of the Canterbury Farmers' Club, are you not?—That is so.

5704. I have got your précis before me. You say, which we all know, that foot-and-mouth disease is of a highly infectious and contagious character?—Yes.

5705. And that being so, its introduction into this country is a serious thing?—Yes, sir.

5706. You also contend that the loss sustained in this country is very serious on that account?—It is.

5707. To dairy, breeding, and fat stock; and I take it from your précis that you are thoroughly satisfied with the present regulations of the Board of Agriculture as regards foot-and-mouth disease in this country?—Yes, generally.

5708. Is there any particular that you would suggest for alteration?—Well, I would make this suggestion: In 1901 I found a case of foot-and-mouth disease amongst a flock of ewes in Chisleth Parish, near Canterbury. There was a footpath running through the field. I put a policeman at each end to stop the people going through, and I immediately telegraphed to the Board. This was on the Friday,

but it was two days, on the following Sunday, they sent down a young gentleman to inspect. Well, I would suggest more promptitude than that.

5709. That was in 1901?—That was in 1901.

5710. Things have a good deal improved since 1901?—Well, there have not been many outbreaks since that.

5711–12. No, not in your experience, but we have had more during the last 12 months than we have had for some time?—Yes.

5713. You did not come across any of these outbreaks last year, did you?—No, I had nothing to do with them at all.

5714. But you think from what took place in 1901, there is a little more promptitude necessary?—Yes, I thought so; I thought two days—movement may take place in two days. I know this flock was moved out of the marsh and brought on to the upland before they did anything.

5715. From your long experience in the profession can you give us your suggestions as regards any further steps we can take for the keeping out of this disease from this country?—I would start upon this basis: We have something very valuable to protect. We have the best horses, the best cattle,

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the best sheep, the best pigs, and the best dogs in the world, and the most valuable, and for that reason I think that, although the measures may be irksome, vexatious, and expensive, our valuable herds are worth protecting, and for that reason I would stop the importation of hay and fodder. And I have heard evidence here to-day that has opened my eyes; these calves being brought in. I would like to point out, sir, that the incubative stage of the disease is a dangerous stage. There is nothing to be seen. I have heard it stated to-day that it is a disease easily recognised. I deny it. I say that in sheep it is most difficult to be sure that it is foot-and-mouth disease until it has become fully developed. Then it is easy enough for anybody; but a lot of mischief may be done before that takes place. I have in my mind a case at Rye where a veterinary surgeon made a mistake. He reported as foot-and-mouth disease a case of aptha. It may be mistaken even in the profession, so that it is not the easy matter that some people think to detect it in its early stages, and these are the important stages to detect it, to prevent it spreading over the country.

5716. Now, as regards the disease, how long do you consider the latency of the disease?—The extent that it may remain before it develops?

5717. Yes?—Well, I think from about 24 hours. There are exceptional cases. If an animal is not susceptible it may be prolonged, but taking the average it would not extend more than about four or five days.

5718-19. You heard cases mentioned this morning where the witness told us it might lie dormant for two years?—I disagree totally.

5720. You do?—Yes.

5721. What is the longest time that you think it would lie dormant?—I do not believe it would lie dormant for a month, not for a moment.

5722. You do not?—No.

5723. A month at the outside?—I think so. I have never known a case where animals have been moved from a market, or been bought—I have never heard of a case where they have been bought and taken on to the farm that it has extended over a month before it broke out. I have in my mind the first outbreak of cattle plague. I had a good opportunity of tracing the extension of that disease. In August 1865 there were some calves bought in the Smithfield market and brought down into the parish where I lived, close to Canterbury. Three calves. Seven days afterwards the owner sent for me to examine; he had got disease, he did not know what, amongst his cattle. He had only 16 head of mature cattle there, and I was able to recognise the disease that I had heard Professor Simmonds lecture on as cattle plague. It was reported to London that same day. I immediately wrote the Government about it and it was a fortnight before anyone came down. Mr. Brown came down, but in the meantime I called in the Mayor, who was an agriculturist, and got a very influential meeting, and I begged and prayed of them to slaughter these 16 head of cattle. I told them what they did in Russia and Austria. How they drew a cordon of soldiers round and prevented anyone going in and coming round. I explained the whole history of the disease to them, and begged and prayed of them to slaughter these cattle. They would not do it. They asked me to go and visit them from time to time. I saw it extend the same as you would throw a stone into the pond with the waves getting bigger and bigger. I was inspecting there over 43 parishes, three markets. A fortnight in Canterbury and the Faversham market as well, and I followed the whole thing right through.

5724. That was a good many years ago?—That was in 1865 that that began.

5725. You have heard the evidence this morning about the different things that can bring in the disease. Are you of opinion that hides are a great source of infection, and sheep's heads?—They must be so.

5726. But you could not give much evidence about that?—Not the importation, no.

5727. Now I want to come to your own profession.

We have asked a good many witnesses about that. Of course the young veterinary surgeons at the present day have no practical experience of foot-and-mouth disease?—No.

5728. Do you think there is any danger of them not diagnosing it in some out-of-the-way part of the country?—I think in sheep it is more difficult to recognise the disease as quickly as it ought to be done, so that it requires a man of considerable experience to be confident. Only I may point to a case in Thanet, only the year before the case I mentioned. My brother went and saw it. He stated it was foot-and-mouth disease in a flock of sheep down at Barton Farm. Even Mr. Cope would not certify it was foot-and-mouth disease until it had got into the bullocks, and I understand the officers who came to the case that I reported to you would not certify until the two bullocks that were on the premises there got it. It is difficult in sheep.

5729. What steps do you think we could take as regards the profession to bring the knowledge to them more than they know now?—I do not see what you could do, for this reason, that they know as much as can be known by reading. It is only by practical observation that they would be quite certain about it, and the only thing that I can say about that is for goodness sake do not bring anything in here to show them; let them go out of the country to find it.

5730. I take it from your evidence you are strongly against any experimental farm in these islands?—Most decidedly, keep it outside by all means.

5731. As regards these veterinary surgeons, you do not think any notice to them would be of any use. We have been recommended that all stock-owners and veterinary surgeons should be given a notice, once in three years I think it was, or once a year, showing them what these diseases are and how they begin?—To the veterinary surgeon I think it would be quite useless; he has learned about it; he has to pass his examination; he has his notes; he knows more about it than your leaflet would convey to him. I think it would be quite useless to the veterinary surgeon. To the farmer it might be of some use; it would call their attention to it, yes.

5732-34. Are you the veterinary inspector for the Contagious Diseases Committee of the County Council?—Yes.

5735. In your case it is all right, but do you think that it would be advisable that all veterinary inspectors appointed by local authorities should be, before their election was confirmed, approved by the Board of Agriculture?—I do not see why; I think the County Council quite as capable to make the selection as the Board of Agriculture would be.

5736. It would be an extra safeguard, would it not?—I see no objection to it at all.

5737. You do not think the veterinary profession would object?—Oh, no.

5738. (*Mr. Richardson Carr.*) There is only one question I want to ask you with regard to the veterinary surgeon learning about this disease. If they cannot do so here, send them abroad to learn it. Do you think it would be worth considering that they should be sent abroad where foot-and-mouth disease exists if it could be managed; would it be an advisable thing to do? Let them go abroad or encourage them to go abroad?—I think the same money that is spent or sacrificed, I may say, in keeping disease out would be more useful.

5739. Only one more question: This disease being so infectious, do you think it would be wise to relax the restrictions imposed when an outbreak occurs regarding the movement of cattle?—No, I decidedly do not. I have long held the opinion that there should be an inner circle and an outer circle. In the inner circle nothing should be moved at all; as strict as possible.

5740. (*Chairman.*) You are giving us your opinion of the necessary restrictions when the disease breaks out?—That is right, sir. In the outer circle move by licence, and take care in deciding on your first circle, the area for isolation, that it is big enough to enclose in the net any straggling cases that may

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have originated from the first outbreak. Then after that, as soon as you are quite satisfied that you have grasped the whole thing, relax and draw in your outer circle within a reasonable distance, and you could do that in the course of perhaps three weeks to a month, but keep the inner circle quite tight, and I think your restrictions would be borne very well indeed by the agriculturists in every way, for their main object is to stamp it out. The object of moving by licence in the outer circle is to obviate cases of great hardship and loss to owners of stock; for instance, a road dividing a farm, the cattle being one side and the food, roots, grass, &c., being on the opposite side of the road, sheep could be moved in a wagon and cattle in a float, the vehicle afterwards disinfected. They know the importance as much as anyone of the evils that this disease brings in a breeding stock. It is most serious where they get it in a breeding stock for the reason that the calves die. I wanted to point that out just now. A calf will die before any evidence of disease at all manifests itself. Many a calf has died before there has been any evidence either in the mouth or in the foot at all, and that applies to pigs as well, young pigs; a great many of them die off without any evidence at all of it.

5741. (*Mr. Field.*) Sheep?—If it gets into a breeding flock you would lose most of your lambs, nearly the whole of them.

5742. (*Mr. Richardson Carr.*) Then you think you do not find any fault with the restrictions adopted at present by the Board of Agriculture, this 15-mile radius?—If you would adopt the plan I have suggested, and not keep this on for any length of time, because that is an extreme distance.

5743. You think that is an extreme distance?—I do.

5744. (*Mr. Morrison.*) I just want to ask you upon one point, and that is in connection with the measures taken after the outbreak is diagnosed. I understand that the premises and the cattle and so on are put in charge of a police constable?—Yes.

5745. Do you think there is any danger of such a man not being sufficiently aware of the risk of infection spreading. Is it not possible that sometimes he may be careless, not knowing the great ease with which the disease could spread; he would not be so likely to be so careful as a veterinary surgeon, would he?—No, of course he would not. He would not understand the importance of it so much, but if he were instructed before, the police would obey their orders.

5746. Have you any experience of disinfection by constables being done in a way that was not scientific, of disinfection of premises, for instance, carried out by police constables; have you seen that sometimes badly done?—No, it is generally very well done.

5747. That is your experience?—Yes, it is.

5748. You have never seen anything but good work in that way?—No.

5749. Do they work entirely in accordance with the instructions of the veterinary surgeon?—Well, they do.

5750. In every case?—They act under his instructions.

5751. Does he superintend and see that the thing is properly done?—Yes.

5752. Is he present during the inspection?—Yes, and the Chief Constable as well.

5753. During the disinfection?—No, the veterinary surgeon is not present but the Chief Constable is; he supervises it over the constable.

5754. But you are satisfied that it is always well done?—Well, I think so; I have never found that disease has extended at all.

5755. (*Mr. Field, M.P.*) I want to know, in that case which you alluded to about the sheep, did it spread to the cattle on that farm?—Yes.

5756. But it appeared in the sheep first?—Yes.

5757. Is that an unusual course?—Well, I suppose if they got the infection first; it would do so.

5758. As a rule, in the cases that have come under your notice, do cattle generally take it first?—I think cattle are more susceptible.

5759. More than sheep?—Yes, and especially young animals.

5760. With regard to your professional experience

in regard to this disease, a suggestion has been made to some of your brother professionals to have a post-graduate course in connection with the infectious diseases for veterinary inspectors of local authorities; would you favour that?—Oh, I think it would be very useful.

5761-62. You think that would be a useful thing to do?—Yes, I do.

5763. Would you favour the idea of travelling scholarships to be given to any man to go to foreign countries to see these diseases that they have no opportunity of seeing in this country?—I think a practical examination, after the course they have been through, would be very valuable indeed, I do think that; a practical examination of the disease.

5764. That can only be done by a visit to foreign countries?—Abroad, yes.

5765. So that you would favour the idea of a travelling scholarship?—Yes. I may mention that in this case, which I reported in 1901, it was thought wise to bring the agricultural scholars from Wye College down to see it. Now, I think that was the most senseless thing possible. It was running the greatest risk of spreading the disease over the country, and no practical good could come out of it.

5766. Was it done?—I was told so by the bailiff on the farm.*

5767. Are you aware that that would not happen now; that permission would not be granted now?—I hope not, sir.

5768. Only one or two more questions. With regard to the area, the large area, the 15-mile area, we had one of your profession here to-day, and he wanted that extended; you are not of that opinion are you?—I would not object to that big area.

5769. Just stick to the one point first; you do not want the outer area extended?—Not beyond that.

5770. But you want a rigid supervision within the smaller area?—Yes. I want that to be very strict; I want the first area to be big enough and wide enough to catch everything in the net, and then gradually begin to draw in when you find that you have grasped and only got one centre. It is useless extending your restriction for 16 miles.

5771. Have you ever thought of anything in the nature of co-operation between your profession in the different countries that are infected, say Germany, Holland, Russia; European countries where we get this disease?—Well, sir, it would be useful, but, I am sorry to point out to you the fact that our Veterinary College is very nearly bankrupt, and so it lies with the veterinary surgeons to bear the whole of the expense themselves. The Government does nothing for the College in any way, and for that reason I do not think you must ask the veterinary surgeons to bear the expense of going abroad and investigating.

5772. I do not know whether that comes strictly within the terms of our reference, but I happen to take an interest in this, as it was mainly through myself that we started the College in Ireland. I understand that they have got a grant for that College?—I have not heard of it; they have been appealing to me for funds.

5773. (*Chairman.*) I believe they are going to give them something?—I hope so.

5774. (*Mr. Field, M.P.*) Would you suggest that the Government should take steps to try to enlist the co-operation of the profession all over Europe?—Yes, it would be very good.

5775. To take common action in regard to what I may call the prevention of infectious diseases in cattle?—It would be very good.

5776. Would you favour that idea?—Yes, I would.

5777. You are to have a congress here in 1914?—Yes.

5778. This subject will be brought before that congress?—Yes.

5779. Are you of opinion that this disease, according to the evidence we have had from all your col-

* I have since seen the bailiff and he now says he is not sure that the students came from Wye College, but he is sure they were students and not veterinary surgeons.

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leagues in the veterinary profession, is an imported disease?—I am certain of it in my own mind.

5780. You do not believe it is indigenous to this country at all?—No, not at all. I do not. Cattle plague, pleuro-pneumonia, foot-and-mouth disease; and I do not believe anthrax would be half as prevalent if we did not import it also.

5781. In fact, all the diseases are imported, and we are a Christian country?—Well, I mention—

5782. Just one question more and I have finished. I do not want to go over the same ground. You favour that idea?—Yes, I do.

5783. And that is the way you think we could put an end to these outbreaks?—I think that would help very much.

5784. In connection with the system, or the suggestion we have made here about disinfecting hides, and not allowing any fodder, and keeping disinfected animals from contact with disease in foreign countries, and taking precautions which exist to a limited extent at the present time?—Yes.

5785. One question more. You are absolutely opposed to allowing live cattle to come into this country from any country where there is a suspicion of disease?—That is right; yes.

5786. You would not remove the embargo on the Argentine cattle?—No; wherever there is the least suspicion I would keep them out.

5787. You would keep them out?—Yes. I have not mentioned it, but I take this view: all these diseases young children, I believe, suffer very much indeed from, and I have seen men even with foot-and-mouth disease. I have seen them suffer severely from cattle plague, and I thought they would die even from it. I believe it is a communicable disease to human beings, and the using of the milk, I think, is exceedingly dangerous to children.

5788. We have not had that view put before us about the foot-and-mouth disease. I have heard it about the catacombs, but not about the foot-and-mouth disease?—I think it is a generally accepted opinion in the profession.

5789. (Mr. Hinds, M.P.) Are you aware of any vexatious restrictions which the Board of Agriculture insist upon at the present time in an outbreak?—I think they are quite right in the restrictions they put on.

The Witness withdrew.

Mr. WILLIAM MARK FURNIVAL, 24 Camden Street, Birkenhead, called and examined.

5801. (Chairman.) You are a member of the Birkenhead Town Council, I think?—Yes, sir.

5802. Are you going to speak on behalf of the Town Council, or are you speaking to-day rather on behalf of a society which is wishing to get the importation of Argentine cattle into this country?—On behalf of the London Committee appointed by numerous corporations.

I am a member of the Birkenhead Town Council, and appear before you as a member of a committee appointed by delegates of public authorities and representative commercial bodies from all parts of Great Britain, which committee has for some time past been urging upon the Government the desirability in the public interests of removing the present restrictions on the importation of cattle from Argentina. The committee's views are expressed in the Memorandum, of which I hand you copies.

I am unaware of the precise scope of the Reference to the Committee, but I believe it to be to investigate into the nature and causes of foot-and-mouth disease. I can offer no scientific evidence on that, but I am authorised by my committee to submit evidence on the following points:—

(a) As to the number of live cattle imported from Argentina prior to the embargo, and the quantity of dead meat brought in from the same ports since.

(b) The loss of employment and the destruction of manufacturing industries which the diversion of trade has produced.

(c) As to the incidence of foot-and-mouth disease

5790. There is no vexatious restriction at all?—Oh, no.

5791. You quite approve all that the Board of Agriculture does at the present time?—I have heard complaints, and I must represent this owing to my representing the Farmers' Club. The objection to the wide extension, and the keeping it on so long. That is why I suggest these two areas, the inner and the outer; and then when you have made sure you have got it on an isolated spot it is just as well to draw in your area and not keep it on to be so vexatious to them.

5792. But there is nothing, in your opinion, that the Board of Agriculture could do in the case of an outbreak more than they do at the present time?—No; I think at the ports is where the source of danger is. We get it brought in there.

5793. Would you advocate the power to be given to the local authority to slaughter before the Board Inspector arrives? I know the danger?—I should have thought it would have been better to investigate as quickly as possible, and then slaughter. There should not be much delay in it.

5794. I mean slaughter by the local authority's inspector, by his order at once; as soon as he thinks it is foot-and-mouth disease?—Well, in the case I have reported it certainly would have been useful rather than stop two days before anything was done.

5795. You do not think two days could elapse before the Board of Agriculture Inspector would be on the spot?—It should not be; but it was, you see.

5796. (Chairman.) That is ten years ago?—Yes.

5797. (Mr. Richardson Carr.) You say it might be well to have two areas?—Yes.

5798. But even although you think that, do you not think it is better to make the 16 miles sooner than run the slightest risk?—I do in the beginning, decidedly.

Even as we do it now. I do not know how long the restriction is imposed now.

(Mr. Field, M.P.) Three weeks.

5799. (Mr. Richardson Carr.) It is only imposed three weeks now these 16 miles. Do you not think that is best, to keep to that sooner than run the slightest risk?—I am sure the agriculturists I am acquainted with would bear that as readily as possible rather than run any risk.

5800. (Chairman.) As regards the area, I suppose, you speak not only your own views, but on behalf of the Canterbury Farmers' Club?—Oh, yes, certainly.

in Great Britain during the periods of importation and during those periods in which importation was prohibited.

(d) As to the elaborate precautions taken at the foreign animals wharves to prevent—and which have, in fact, prevented—even an isolated case of infection being conveyed outside those wharves.

I propose, therefore, by carefully prepared records and statistics, to show that, whatever may be the cause and character of foot-and-mouth disease and the best means of preventing its conveyance to our own country, it never has been and cannot be spread by live cattle landed at the foreign animals wharves for immediate slaughter for purposes of food. I submit, therefore, that from this aspect my evidence may be regarded as relevant to this inquiry, seeing that one of the primary objects of holding it is to ascertain if the embargo on Argentina cattle can be safely removed.

A. Relative Imports of Live Cattle and Dead Meat.

I am unable to give the Committee the figures for 1911, but for the six years, 1905–10, the live cattle imported for slaughter (and absolutely prohibited from moving a foot outside the lairages) were as follows:—

1905	-	-	-	-	565,139
1906	-	-	-	-	561,215
1907	-	-	-	-	472,015
1908	-	-	-	-	383,130
1909	-	-	-	-	321,340
1910	-	-	-	-	219,561

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In the same period the imports of chilled and frozen meat, stated in cwts., were:—

1905	-	-	-	5,778,357
1906	-	-	-	5,981,473
1907	-	-	-	6,033,736
1908	-	-	-	5,997,964
1909	-	-	-	6,583,359
1910	-	-	-	7,557,374

It is pertinent to note that the bulk of this increase has been in the imports from Argentina, whose live cattle we prohibit because of the supposed risks of disease, but whose dead meat we admit for the food of the people, under conditions which are not nearly so satisfactory from a sanitary point of view as those which govern the imports of live cattle. The South American exports to this country have gone up from 2,814,622 quarters of chilled and frozen meat in 1906 to 4,340,653 quarters in 1910.

B. Loss of Employment and Destruction of Industries.

When dead meat instead of live cattle is imported the carcase is chilled or frozen, not only the hide and hoofs, but the head, heart, liver, &c., first being removed. In this substitution of dead meat for live animals many trades are prejudiced. The shipping industry is, perhaps, affected more than any other, inasmuch as probably more than four times the amount of tonnage is required for conveying live animals as for dead meat. But, in addition to these are all the trades concerned in dealing with those portions of the animals now removed before shipment to this country, viz.:—Hide trade, tanning trade, boot and shoe trade, saddlery trade, belting and fancy leather trade, tallow, bone, glue, and gelatine trades, blood, albumen, and manure trade, horn, pith, and comb trade, hair, felt, and brush trade.

The effect of this diversion of trade is to be seen in the riverside districts of the ports of debarkation where to-day can be seen empty and derelict numerous small factories which formerly employed many thousands of skilled artisans at good wages. It is computed by competent authorities that every head of cattle imported involves the expenditure of £3 in wages in dealing with the beast and offals. As I have already shown, the number of animals imported has decreased from 565,139 in 1905 to 219,561 in 1910.

The decrease thus represents a loss of well over a million pounds sterling in wages paid in connection with the subsidiary industries I have indicated.

C. Incidence of Foot-and-mouth Disease.

I desire to bring before you certain facts which indicate that whatever may have been the cause of outbreaks of disease it must be sought elsewhere than in the importation of Argentine cattle. The following table compiled from official sources shows that there have been many outbreaks when Argentine cattle have not for years been admitted into the kingdom, and many cases of freedom from disease while the importation was allowed.

Year.	Head of Cattle Imported from Argentina.		Number of Outbreaks of Disease in England and Wales.
	Birkenhead.	Deptford.	
1898	22,318	66,796	None
1899	25,420	59,245	"
1900	7,475	32,079	24
1901	Nil	Nil	9
1902	"	"	1
1903	7,624	19,643	Nil
1904	Nil	Nil	"
1905	"	"	"
1906	"	"	"
1907	"	"	"
1908	"	"	3
1909	"	"	Nil
1910	"	"	2
1911	"	"	19

These figures as to head of cattle are supplied by the officials of the several markets, and the record of outbreaks of disease from parliamentary replies given on February 29th, 1912, to a question addressed to the President of the Board of Agriculture by Mr. Bigland, M.P. I should add that sheep in much larger numbers were imported in the same year, and prohibited at the same time as cattle.

D. Precautions at the Foreign Animals Wharves.

I have already dealt with the loss of employment and wages resulting from the non-shipment of the hides, hoofs and other offal in the case of dead meat. But there are nevertheless considerable quantities of hides and hoofs imported into Great Britain every year; and upon this I say that the precautions at the foreign animals wharves and lairages are so complete and efficient in regard to the letting through of a possible case of disease developed on the voyage that it is far safer to import the live animal for immediate slaughter at the lairages than it is to receive the hides and hoofs from other countries. Assuming for the moment that foot-and-mouth disease can be introduced into this country by means of hides and offals imported from abroad, then the present system, under which they are indiscriminately conveyed from every country, constitutes a much greater danger to the farming community than if the hides came in on animals "on the hoof," because in the latter case the animals would be brought into places specially set apart for their reception, and they are then landed and finally slaughtered (within ten days of landing) under the supervision of the veterinary staff of the Board of Agriculture. The presence of disease among animals is readily detected, and, as in the past, if disease were found to exist among the cargo, the measures taken are so drastic that there could be no possibility of the disease spreading.

At either Birkenhead or Deptford the animal would be immediately slaughtered, and the parts affected there and then destroyed. On the other hand, it is impossible to ascertain whether hides or offals are affected except by bacteriological examination; and, of course, for this to be carried out to any extent, or at all events sufficiently to be of any precaution, it would make business in the leather and allied trades an impossibility.

At this point I beg to put in a plan of the Woodside lairage at Birkenhead which has been prepared by the Birkenhead Borough Engineer. The foreign animals wharves at Birkenhead and Deptford are the chief places at which imported cattle for slaughter are received; and upon this, it is, I think, important to note that both were originally established for the reception of animals from countries suspected of being infected with foot-and-mouth disease; and the arrangements of the wharves were expressly designed for preventing disease from getting outside them, if by any chance infected animals should be landed.

The wharves at Birkenhead consist of three parts: the Woodside portion, the Wallasey portion, and the Alfred lairs, really separate wharves, but connected. The system observed in order to prevent the spread of infection is as follows:—

Animals when landed are placed under the charge of an inspector of the Board of Agriculture, and until his arrival they remain under the charge of the Commissioners of Customs and Excise. The animals are examined in a reception lair by an inspector of the Board of Agriculture during daylight; and if on such examination all are found to be free of disease the inspector permits them to be moved to other parts of the wharves, there to be dealt with in the ordinary way, *i.e.*, to be slaughtered and dressed for food. If, on the other hand, any should be found suffering from disease, they are isolated, and immediately killed, the offals destroyed, and all persons having been in contact with them specially disinfected. Cattle can be landed into the wharf at three points, viz., the Woodside animals landing stage, the Wallasey animals landing stage, and the Alfred Dock. The lairs at Woodside afford accommodation for 3,000 cattle, Wallasey 2,000, and the Alfred lairs 1,200. There is also accommodation at Wallasey for 16,000 sheep. The Woodside portion of

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the wharf is 1,000 yards from the Wallasey portion, and the Alfred lairs are quite distinct and separated from the Wallasey lairs. Should there be any suspicion of disease in a cargo of animals they can be landed in the Alfred Dock, and there isolated, leaving the two landing stages free for disembarking unsuspected cargoes.

The voyage from Argentina occupies about 25 days, whereas the period of incubation of foot-and-mouth disease is estimated at from 10 to 14 days. Thus, should an infected animal be inadvertently shipped at an Argentina port the disease would be so fully developed on arrival at Birkenhead or Deptford that its detection would be inevitable; and the precautions taken as regards isolation in the case of disease, the use of overall clothing, the disinfection and the supervision exercised by the officers of the Board of Agriculture and the Dock Board, are so complete and exhaustive that it is practically impossible for any disease to find its way outside the wharf.

In fact, there is no instance on record of such an occurrence, and upon this I would beg to cite the answer given by Lord (then Sir Edward) Strachey, as representing the President of the Board of Agriculture, in reply to a question addressed to him by Sir C. Schwann, M.P., in the House of Commons on June 16th, 1910. Sir C. Schwann asked "Whether there existed at the Board of Agriculture well-authenticated cases of infection from Argentina cattle slaughtered at ports of debarkation in the United Kingdom being communicated to cattle and herds in this country."

Sir Edward replied: "There is no record of the occurrence of any cases of the character to which my hon. friend refers."

I would specially draw your attention to page 25 of the Board of Agriculture's report for 1908 showing the precautions taken to prevent infected animals being conveyed up the Manchester Ship Canal, and the arrangements made with the Mersey Docks and Harbour Board "whereby any cargo of animals among which disease was found should be diverted to the foreign animals wharf at Birkenhead and dealt with there." Surely these words show conclusively the reliance which the Board of Agriculture placed on the methods in force at Birkenhead, and nothing to my knowledge has happened since to shake that confidence; and I think you will agree that equally good precautions are taken in the Deptford Market.

As a matter of fact foot-and-mouth disease was discovered amongst some cattle landed at Birkenhead Wharf from Argentina on April 20th, 1900, and again on June 10th, 1903. The two cargoes were landed at the Alfred Dock and isolated in the Alfred lairs. But, as Sir Edward Strachey agreed, in the answer I have quoted, no case of disease arising therefrom in this country resulted.

I would also draw attention to the paragraph in the 1908 Report at the foot of page 23, viz.: "In these circumstances the Board do not deem it necessary as a matter of course to prohibit the importation of animals from the United States of America . . . since the length of the voyage from America to Great Britain, coupled with the special precautions which it is possible to take at the ports in this country for dealing with a cargo of animals and the vessel in which such animals have been carried should disease actually be found therein, afforded an additional security against the risk of the disease being carried to animals in this country."

I submit that all this applies with far greater force to South America, as the voyage is fully three times longer in point of time.

With regard to the Deptford Wharf, the arrangements and precautions are practically identical with those at Birkenhead; and I would respectfully suggest that the members of the Committee should try to make it convenient to personally inspect them.

I trust I may be permitted to ask you to consider the other information contained in the Memorandum which I have handed to you, although it may not come within the terms of your reference. But I ask for your consideration of these statements on the ground that the

present President of the Board of Agriculture told us when we waited upon him, as a deputation, that the question was a difficult one, as it was really balancing two evils one against the other. If it be an evil to allow cattle in from Argentina, then I submit that we have shown clearly that it is not such a great evil as will in all probability arise under the present system, which will tend sooner or later to place the overseas supply in the hands of firms known as trusts, and this, as you will see in the statement, we argue, would be very detrimental to the farming community.

5803. Well, I am bound to tell you at once, of course, that is absolutely outside our reference altogether. You quite understand that our reference is that we are to take evidence to see what steps we can take to prevent these outbreaks of foot-and-mouth disease in this country, and, therefore, what you are going to give evidence upon is outside our reference altogether. At the same time, the Committee unanimously feel that as we have taken evidence from other gentlemen upon the subject of the importation of foreign animals, we should not like your society to be left unrepresented and not to give evidence, for the simple reason that I believe you wrote up to the President and asked him to put one of your members on the Committee, and failing that, to give evidence?—What we asked him was, to put one member of Parliament upon the Committee who was favourably disposed towards our case, because we anticipated just what I have heard in this room to-day, ideas expressed which are pretty prevalent against the interests of those communities we represent.

5804. I see you say in one of the paragraphs of your précis: "I submit, therefore, that from this aspect my evidence may be regarded as relevant to this inquiry, seeing that one of the primary objects of holding it is to ascertain if the embargo on Argentine cattle can be safely removed." I may say at once that what you are going to say is affecting a question of policy; it is not a question of administration, and we have not got anything to do with the policy of the Board; we have simply to find out certain facts, and therefore, if there is anything you wish to say, I am sure the Committee would be perfectly prepared to hear you?—Well, I press that. We asked the Minister of Agriculture whether he would reconsider our appeal to him, made some time ago, to remove these restrictions on Argentine cattle only for slaughtering at the port of debarkation; he replied that he would consider it in the light of the finding of this inquiry, and another inquiry that he promised to institute.

5805. Of course, I have nothing to do with what the President promised; I do not know what President it was; but I think the Committee will bear me out in what I say that really the question of importation into this country of foreign animals, be they from the Continent or be they from the Argentine, is absolutely outside our reference; we have got nothing on earth to do with it. At the same time, we are perfectly prepared to have short evidence on whatever points you like to give it?—What I desire to argue is this, that if you admit that there is no proof that the recent outbreaks in England—or any outbreaks in fact—can be attributed to the importation of foreign cattle, then, of course, that is the point we want to prove, and our object will be achieved. Our anxiety is that this Committee should not, through the evidence that is laid before it, say, as I have heard to-day nearly every witness when you cross-questioned him practically say, he would not allow the restrictions to be removed from admitting foreign cattle.

5806. (Mr. Richardson Carr.) From infected areas?—From infected areas.

5807. (Chairman.) Yes?—Well, we claim that there is a great deal of difference between infected areas; for instance, to attempt to remove them from the Continent would be a ridiculous position to take up, but to remove them from an infected country like the Argentine Republic is quite a different thing altogether, and what we want the Government to do is to treat Argentina in exactly the same way as they treated the United States, where you admit cattle from

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the healthy areas, and we have absolute proof that there are vast territories in the Argentine Republic that are clear of disease at this moment.

5808. Yes, but at the same time I may call your attention to this. Here is a report to the President of the Board from our representative at Buenos Ayres dated 22nd November 1911, in which he says in very pointed language that there is a good deal of foot-and-mouth disease in Argentina, in Corrientes, in Formosa, and several other places, and therefore, as far as that disease exists under our regulations, of course animals are not allowed to be imported from that country into this except for slaughter?—Yes, but you did that in America; it was done in America just precisely the same, and on page 24 of your 1908 report it is laid down very fully, the report of the Secretary of the Board of Agriculture. He talks about the question of unemployment, of the shipping industry, and all the rest of it, and he mentions here the length of the voyage, the nine days, and the precautions taken at the port of landing. That is the part I particularly want to bring before this Committee.

5809. Do it in your own way?—That the precautions taken at the foreign animals wharf are so great that it is absolutely impossible to spread disease into this country. And if you would permit me, I would like to submit—which is practically a summary of the whole case—this letter, which I received only yesterday morning, from a firm of manure manufacturers:—

“Dear Sir,

“I notice that you are to give evidence on the question of foot-and-mouth disease. I would like to point out to you that the only districts in Argentina that are materially affected by foot-and-mouth disease are Corrientes and Entre Rios. As these districts have their own packing-houses the live cattle would not come to this country. On the other hand, I would like to point out that from these districts practically all the offals such as tankage” (that, it is explained to me, is the sweepings of the lairages where they have slaughtered the very diseased animals in these districts) “dry blood, hides, bones, &c., come here. These materials are used mainly in the manufacture of fertilisers, most of which is used on the land in Great Britain. The mere fact of drying the material does not kill the foot-and-mouth germ, and constantly it is sown broadcast on English soil.”

5810. Who is this from?—Central Chambers, 17A, South Castle Street, Liverpool, Messrs. Alexander Gordon and Sons, Ltd., Albumen and Organic Nitrogen Manufacturers.

5811. What is that stuff, do you say?—Tankage it is called; that is the sweepings of all the offal; practically this dead-meat business that you have heard a witness speak about to-day.

5812. That comes from the Argentine?—Yes, and shipped into England.

5813. For manure?—Made into fertilisers for the English soil.

5814. How long has this trade been going on?—I take it it has gone on ever since that country has been scheduled.

5815. Possibly that is the reason why we have had these outbreaks in this country?—That may be so; that is what I want to submit, that that is the risk you are running.

5816. If you are to do nothing else, Mr. Furnival, you have been of some help to us in this, I think?—That is what I want to show; I want to show that the safest way of importing any meat from the Argentine will be in the form of the live animal.

5817. You are giving us this to bring that in?—Yes. Well, that is the way.

5818. A thing like this I think it is very important should be brought out. I think a thing like this ought at once to be sent to the Board of Agriculture?—I should be only too pleased if you will accept a copy of this memorandum. This is the case of our London committee fully drawn up, and I have brought a copy for each of you gentlemen if you will kindly peruse it afterwards.

5819. Yes. What you have told us about this tankage is most important, although I think it is a question which has nothing to do with us at present?—Is not that within the terms of reference to point out the cause of disease?

5820. It ought first of all to go to the Board of Agriculture, but I think it is most necessary we should have some evidence upon this if it is absolutely to be relied on that this has been going on for some long time?—I am certain it is true because I have been in touch for a considerable time with the Mersey Docks and Harbour Board, and while they could not give me the figures the other day of the quantities that come from America and that which come from the Argentine because their figures are all lumped together. But there is no doubt they could furnish you with the quantities of this kind of material which is shipped.

5821. Who could we get it from?—From the Mersey Docks and Harbour Board, I should say; they are responsible for the Port of Liverpool, or these people from whom I have received this letter. If you want evidence of that kind I should recommend the President of the Meat Trades Association. I believe they have applied that they should be invited to give evidence.

5822. (Mr. Field, M.P.) That is Mr. Alderman Stevenson?—Mr. Alderman Stevenson; he is an Alderman for the city of Liverpool, and he has taken close interest in this question, and nobody knows more about it than he does in the city of Liverpool.

(Chairman.) Have they not now refused to give evidence?—(The Secretary.) They telephoned after they got the reference that they had decided not to come.

5823. (Chairman.) Anyhow we could get the evidence?—The only thing I feel, Mr. Chairman, from what I have heard from the previous witnesses, and the questions the different members of this Committee addressed to them, is that they all would prohibit the importation of foreign animals, but they do not say why. The period of incubation and all these points make it absolutely safe to import them as against the risk of importing these dangerous diseases as I suggest are imported, and as we state in this case which I have drawn up. This map, which I should be pleased to leave with you if you like, shows the foreign animals wharf at Birkenhead. This is the Wallasey portion and these are the sheep places; places for about 16,000 sheep. These are the lairages. If any affected beast came over from America or South America it would be landed here like they were in 1903, discharged into that lairage, and destroyed in these destructors that are somewhere about. And there was no case on record of disease being spread from either these cattle or any previous cattle landed at our wharves, as I think I show under D of my précis. During the last 30 years there have been only three cases known where they have landed a diseased animal from the Argentine.

5824. At the same time the fact remains that the disease is in the Argentine at the present time, and the policy of successive Boards has been from the very beginning, that as long as disease is in any country that country is debarred from sending animals into this country?—You did not do that with America in 1908.

5825. I beg your pardon; I daresay for a time when America had been for some months free; they were only then admitted?—No, you simply scheduled certain districts in America; if you look at page 24 it is all laid out fully.

5826. Which year are you talking of?—This is the 1908 Report.

5827. (Mr. Morrison.) The States scheduled themselves?—Yes, and you allowed the importation to this country; I remember it well.

5828. (Chairman.) It is a big country?—So is the Argentine. What I really want you to do as a Committee is not to make any statement in your findings that is unfair to those who are working for the removal of the Argentine embargo, because we claim that before anybody could say disease could be attributed to the importation of a foreign animal we ought to

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MR. WILLIAM MARK FURNIVAL.

[Continued.]

have proof that it is so. It is no use saying, like some of the witnesses say, that they would not allow these restrictions to be relaxed, because they give no reason. It sums up to my mind that a man might say I will not travel from Liverpool to London for fear there might be an accident, or I will not go out on a chilly day because I might get a cold. It would be a ridiculous position if we took up that view of things. The period of the voyage, twenty-five days from Argentina makes it impossible, I may say, to import the disease without knowing it. As a matter of the health of the herds in this country, it would be far safer to import the live animal than to import the hides or those parts that might be tainted. That is the point where you can properly deal with it. Just suppose this tankage stuff which is coming over and being put on the land in England. That might be a source of the breaking out of the disease. If the animal instead of those portions of meat came over, if it were possible to ship it to England alive, it would develop the disease in that period of twenty-five days and would be destroyed; hide, meat, flesh, all, everything, nothing could ever get on to the land, or on to the butcher's table for consumption as human food.

5829. I cannot say more myself personally than that it is a question of policy, and it is not a question for this Committee. We are quite willing to hear you?—If I can point out the risk on the one hand, and urge you not to make any special report to your Department against the importation.

5830. I can make no promise as to what the Committee will put in their report, all I can give an undertaking in regard to is to hear anything that you might bring forward to show us, with our reference, which is to prevent foot-and-mouth disease, what steps we are to take to prevent foot-and-mouth disease, is going to be met by your society that wish to import these animals into this country?—I do suggest, with all respect, that the safest thing to import is the live animal. I do not say from a country so near as a Continental country, because the distance is so short. You might land the disease here nearly every cargo, particularly where it is so prevalent. But from a country like the Argentine, from which you are drawing nearly the majority of your food supplies to-day, it is quite another matter. You do not wish me to go into those figures, I presume?

5831. We have all these figures in your précis?—A large bulk of your meat supplies; your oversea supplies are coming from the Argentine.

5832. The Committee have decided they are very glad to have seen you and are very grateful to you, most grateful, for having brought that question of tankage forward. We think, however, as I said before—I told you myself—that it is a matter of policy. At the same time, if there is any more you wish to say we are perfectly prepared to hear it, although we do not propose to cross-examine on it?—Well, I can only say I submit, with all the respect in the world, that the matters under the headings of "C" and "D" in my précis which I lay out here do come within the terms of the reference if it is to inquire into the recent outbreak, that is, that the incidents of the foot-and-mouth disease in Great Britain during the periods of importation of animals from the Argentine have nothing to do with the outbreaks in England because, you see, the last cargo landed in England in 1903 you had no outbreak for one year before, and for five or six years afterwards, and therefore I would ask you, with all respect, not to say that it is from importation of foreign animals, whereas, in fact, we claim you cannot—and that has been backed up by the statement of Lord (then Sir Edward) Strachey in answer to a question put to him in the House of Commons by Sir C.

Schwann, when he admitted disease could not be traced to the foreign animals wharves.

5833. The Committee can give no undertaking of any description as to what they are to put in their report?—And, again, I would like to submit to you all the precautions at the foreign animals wharf at Birkenhead, the various questions you put to various witnesses—particularly the veterinary officials who have been before you to-day—in my hearing that I would ask you to have before you those veterinary experts that are down at these foreign animals wharves belonging to the Government themselves. There are four at Birkenhead. There must be several at Deptford. I would like this question put to them, whether in their opinion it would be dangerous to import cattle from the Argentine. Would that create any risk to our herds although Argentina is an infected country?

5834. I may tell you we had Mr. Smart, who was one of the Board's veterinary inspectors at the port?—Yes, he used to be at Birkenhead.

5835. I do not say we put to him that particular question about the Argentine, but he was asked whether he would be willing to see animals from infected countries landed in this country, and my recollection is that he was strongly against anything of the kind?—Well, of course, I cannot commit anybody, but every one of the Board's veterinary inspectors I have spoken to in connection with the matter say, in their opinion, there would be no risk whatever in importing from a distance like the Argentine. I can only again press upon you the action that was taken by the Board in that 1908 outbreak in the United States, where they even allowed cattle to be shipped through the infected areas in sealed trucks. I know it is a matter of great moment to the agriculturists of this country to have their pedigree stock imported into the Argentine, and I know this, that the Argentine Government are very very sore over what they consider the harsh treatment of this Government.

5836. It is not only this Government; it is all Governments?—All Governments. I am not referring to any particular Government. The English Government.

5837. And successive Presidents of the Board of Agriculture?—That is so. I do not know that I can say anything further than I have said in my précis to you.

5838. Your précis shall be considered, I shall promise you that?—Yes, well I should like it to be, very much, because we do represent a big interest, and we claim that we are being penalised, and as I have heard to-day evidence that our foodstuff is brought in from the Continent it must be at very, very great risk, and also certain articles are brought in belonging to the animal, from the Argentine; again, at very great risk, because they are coming from those very infected parts of the Argentine, and evidence was given to me no later than yesterday that something like 110,000 live animals have been shipped from the non-infected ports of Argentine to different continental ports, without a single case of foot-and-mouth disease being discovered. They were all isolated for 30 days before shipment. That, of course, as I know, is outside your point, but that is the only thing I wish to press, that there is no risk to the herds of this country by importing these cattle from Argentina, for slaughter at our ports.

5839. Of course, you must not think that the Committee do not wish to hear it, but we think it is a question of policy?—I quite see the point, and I think that is what I felt when I was first invited.

5840. We shall ask for veterinary evidence again on this point?—Over that period from the Argentine?

5841. Yes, certainly.—Thank you very much.

The Witness withdrew.

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Mr. CHARLES DOUGLAS.

[Continued.]

Thursday, 14th March 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (*Chairman*), presiding.

Sir CHARLES D. ROSE, Bart., M.P.

Sir HARRY VERNEY, Bart, M.P.

Sir J. BOWEN BOWEN-JONES, Bart.

Mr. CHARLES BATHURST, M.P.

Mr. JOHN HINDS, M.P.

Mr. GEORGE R. LANE-FOX, M.P.

Mr. RICHARDSON CARR.

Major E. MARTEN DUNNE.

Mr. E. E. MORRISON.

Mr. E. M. NUNNELEY.

Mr. W. H. F. LANDON (*Secretary*).

Mr. CHARLES DOUGLAS, Auchlochan, Lesmahagow, Vice-President of the Scottish Chamber of Agriculture, called in and examined.

5842 (*Chairman*.) You are Vice-President of the Scottish Chamber of Agriculture?—That is so.

5843. And you are coming to represent them on this question?—Yes.

5844. You are not going to speak, I suppose, on behalf of the Highland Society?—No; I have no commission from the Highland Society, but I can refer you to resolutions that have been passed on the occasion of recent outbreaks, which are pretty much in the same sense as the evidence from the Chamber.

5845. Your Chamber, I suppose, attaches very much importance to this question of foot-and-mouth disease?—Yes, it, of course, affects the general industry of stock-breeding in Scotland, and we have a special interest, as you are aware, sir, in the fact that we export pedigree cattle largely from Scotland, and that business is very much prejudiced by the existence of outbreaks in any part of the country.

5846. When was your last outbreak in Scotland?—I am afraid I cannot remember the year.

5847. It is some years ago?—Yes. There was an outbreak in Edinburgh in 1908.

5848. It was traced to the foreign hay?—It has been given in evidence before you already; it was traced to imported hay.

5849. And you consider that the question is so important that you are glad, I suppose the Chamber is glad, that this Committee has been appointed to inquire into the whole affair?—Yes, the Chamber welcomed the appointment of the Committee.

5850. Have you anything to say as regards the way the Regulations are carried out when an outbreak does take place; are you satisfied in Scotland with the action of the Board as regards the Regulations?—Yes; the opinion was expressed, I think, by everyone in connection with the Chamber that they were gratified with the manner in which the Regulations had been carried out, and they especially urged that there should be no relaxation of the precautions to prevent the spread of foot-and-mouth disease.

5851-2. You do not wish any relaxation as regards the restrictions on the importation of foreign animals into this country?—No, and the precautions taken locally when outbreaks do occur.

5853. And they would be very sorry to see, I presume, any of the Regulations altered. They do not wish to see them relaxed in any shape or form whatever?—None whatever; no.

5854. It is a little outside our reference, because it is a question of administration, but you are satisfied with the areas which the Board make when an outbreak takes place?—Yes. Of course, we in Scotland are rather in the happy position of not experiencing the actual operation of these recent restrictions, but we are satisfied with the effectiveness of what has been done.

5855. I see that your Chamber urges the maintenance of a complete embargo on all European hay and straw?—That means, of course, from European countries that are infected.

5856. Quite so, from infected countries?—Yes.

5857. The Chamber would not like to see any alteration in that regard?—No; no one, I think, is in favour of any relaxation of that.

5858. Have they expressed any view, or can you express any view about hay and straw for packing; have they had that before you?—Yes; I ought to mention that the matters to be brought before this Committee,

were brought to the notice of all the members and the affiliated societies of the Chamber; so that, what is suggested to you here, is not merely the view of the directors of the Chamber, but of Scottish farmers generally.

5859. They have been consulted?—This question has been put before them, and, I think, there is a general concurrence of opinion as to the danger through hay and straw brought as packing material. We say, that all hay and straw comes from farms, and, in our experience, it is very apt to go back to farms, and there will always be cases in which careless farmers do not destroy this hay and straw, and it finds its way to the byres.

5860. Of course, this question of packing is an important one; we have heard a great deal of it in evidence. Do you find, of your own knowledge, that a great deal of this hay and straw really does go into the byres in Scotland? Is it ever burned, do you think, or is it generally used for litter?—I think it is very apt to be used as litter. I am not speaking from knowledge of what happens in my own case, but I have heard a very large number of farmers say that they knew of hay and straw brought in as packing being used as litter.

5861. Then, I suppose, you would agree that it is rather anomalous that we prevent hay and straw coming in from infected countries for feeding purposes, and yet we allow hay and straw to come in for packing purposes?—Yes.

5862. It is rather an anomalous position?—Yes. The risk in the one case is substantially as great as in the other.

5863. Have the Chamber taken into consideration any other imports from which they think there is a danger of bringing in disease?—Yes, they regard raw hides as a source of possible contagion, and I was specially asked to call attention to the import, which takes place on a considerable scale, of calves.

5864. Calves in their skins?—Calves in their skins which come into Leith. My information is that something like 3,000 come in every year to Leith. These are Dutch calves for the most part.

5865. We had that in evidence from a witness that at Leith there were these coming in?—Yes.

5866. And you are of opinion that they are a source of danger?—Yes.

5867. A source of possible danger?—Of course we have to recognise that all these trades have been going on, and that we have been singularly fortunate in escaping outbreaks, but we cannot shut our eyes to the fact that these are real sources of danger.

5868. Of course, our difficulty is this: since your Edinburgh outbreak we have not been able to find evidence that any particular import has been responsible for any outbreak; that, of course, is our difficulty. What we have to try to find out is if any imports are a source of danger?—On the other hand, while no outbreak has been traced to these sources it has not yet been found possible to track the outbreaks back to any other source.

5869. Have you ever considered the question of a quarantine station in this country for pedigree stock for export, or has your Chamber ever considered the question?—For animals to go abroad?

5870. Yes?—I do not think that has been considered by the Chamber at all.

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[Continued.]

5871. Some of these countries will not take our pedigree animals because there is one case of foot-and-mouth disease in a distant part of the country. They exaggerate it and think it is all over the country. Have you any views upon that?—I see great use in having a quarantine station in this country if it were recognised by foreign Governments, but they would be unlikely to recognise it unless they had a considerable degree of control over it, I should suppose. There is, of course, a certain risk if you have a large quarantine station containing, say, animals which are there for a month before they can be tested for tuberculosis; there is considerable risk that diseases might spread in the quarantine. It would require very careful and complete isolation.

5872. Well then, one word about the veterinary profession in Scotland: Are you satisfied that the veterinary profession as a whole thoroughly understand and know foot-and-mouth disease when they see it?—I think a very large proportion of them have not had the advantage of seeing it, but I have never heard any doubt expressed either by farmers or veterinary surgeons as to their ability to diagnose the disease. But there has been so little experience during the years which our most progressive veterinary surgeons have been in practice that I should think a very large proportion of them have never seen a case of foot-and-mouth disease.

5873. And do you not consider it is rather a source of danger to us that so many of our veterinary surgeons, through no fault of their own, do not really know anything about foot-and-mouth disease?—I can conceive its being so.

5874. (*Sir Bowen Bowen-Jones.*) I understand that the regulations for the exportation of live stock from Scotland are less onerous than they are from other parts of the United Kingdom; is that so?—I am not aware of it.

5875. You are exporting now, and we are not permitted to export?—We are allowed to export to Canada and to the United States. I think for the last few days these ports have been open, but our export has been under complete embargo for South Africa, for the United States, and for Canada. I should say since probably June last. The South African ports are not yet open, as I happen to know. I am not aware of any other country except Canada and the United States which have even now opened its ports to Scotch cattle.

5876. Has the Argentine opened her ports?—I think not yet; I am not absolutely certain, I have not heard of their being opened.

5877. I was rather curious to know why Scotland was granted that privilege by other countries when the remainder of the United Kingdom has not obtained the same privilege?—In practice, I think a foreign Government would recognise that there was less danger of foot-and-mouth disease passing from England to Scotland than from one part of England to another because our import of cattle and sheep is very small into Scotland. There is only a restricted traffic; a certain number of dairy cows come from the North of England to Edinburgh and Glasgow, but on the whole there is a very slight import, whereas, of course, there is a very large export of stock, especially sheep, from Scotland to England, and a constant movement from one part of England to another. There is much less risk of movement from an English infected district to a Scotch district than from one part of England to another.

5878. Should you think that is the explanation of the fact that you obtain freedom to export to foreign countries earlier than the rest of the country?—It may be so.

5879. (*Sir Charles Rose, M.P.*) Do you think it would be undesirable that there should be any relaxation in the restrictions now made by the Board of Agriculture when cases break out in this country?—That is our view—yes.

5880. And you are satisfied with them as they stand?—Yes.

5881. You have referred to the danger, in your opinion, as to the hay and straw for packing coming

in, and you have cited the Edinburgh case which you thought was traceable to that?—I did not suggest that it was traced to hay and straw brought in for packing; it was, I think, hay brought in for feeding purposes, but that same bundle of hay might equally easily have been used for packing.

5882. Would it be particularly desirable to have a notice issued to all farming people that they should in no case use hay and straw that comes in for packing in their own yard?—I am afraid that it would not be a very operative step.

5883. No regulation by legislation could be done. Do you know of any people whose business or trade it is to collect hay and straw for packing and dispose of it afterwards?—I do not know of that, but I know that through some agency a good deal of packing hay and straw goes to farms in the neighbourhood of towns.

5884. Have you traced that to any specific cases?—Not in business.

5885. Do you not think that would be worth inquiring into? There is evidently a danger that this hay and straw for packing does find its way from the warehouse people into the farmyard?—I do not think it is possible to prevent the hay and straw going to the farms if it is allowed into the country.

5886. You do not think it would be possible?—To keep it from going on to the farm.

5887. Do you think then that the people who consume it are aware of the risk they are running; I mean the farm people; are they aware of the risk they are running?—No, I daresay they are not aware of it.

5888. Would it not be desirable to have that brought to their notice by some form of circular?—Yes, if these substances are coming into the country it would do no harm to notify people of the danger.

5889. Assuming it could not be stopped, do you think it would be important to give notice to the people?—Yes.

5890. (*Sir Harry Verney, M.P.*) Do I understand that this was discussed at the Scottish Chamber?—It was discussed at a meeting of directors, and then certain queries were sent to individual members and to affiliated associations so that they had an opportunity of considering what was said on their behalf.

5891. And was it the wish of everyone consulted that hay and straw for packing should not be introduced?—Yes, there was not one dissentient voice.

5892. Was anything said about the interference with trade or was it entirely from the point of view of agriculture?—Oh, entirely from the point of view of agriculture; I admit at once that it was not considered from the point of view of general trade.

5893. Nothing was said about it at all?—No, it was purely as a precautionary measure that it was considered.

5894. (*Mr. Lane-Fox, M.P.*) You say that the bulk of agricultural opinion in Scotland is against any relaxation of the restrictions on the importation of cattle?—Yes.

5895. And, therefore, the opinions we have had from Scotland in favour of it are, I suppose, mainly from the shippers?—I do not think that anybody representative of Scottish agriculture has expressed an opinion in favour of relaxing the precautions in that respect.

5896. About this hay and straw, would it not be a more effective method than sending out a Board of Agriculture leaflet, if your Chamber of Agriculture communicated with the other affiliated Chambers, passed a resolution and sent it on to them, and sent a copy to the farmers, more than a leaflet from the Board of Agriculture?—I think the Board of Agriculture is the body to which we would look for guidance of that kind.

5897. Yes; but a leaflet is naturally torn up, is it not?—I hope not.

5898. Has it ever occurred to you to try that?—No.

5899. To suggest it to the farmers?—No.

5900. (*Major Dunne.*) Is very much town-made manure taken out to the land in Scotland?—Yes.

5901. I suppose there is a danger of infection being brought in that way?—Yes.

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[Continued.]

5902. Because a parcel of hay and straw is used in stables and so on in town, and eventually finds its way on to the land in the shape of manure?—Quite so; stable manure from town is carted out into the adjoining districts, and goes to the dairy farms in many cases in my own knowledge.

5903. I suppose you do agree that there is a risk of infection through this distribution of town-made manure?—Yes.

5904. (*Mr. Bathurst, M.P.*) I think you said just now that you were not aware of any agricultural opinion in Scotland favouring the relaxation of the present regulations. I think I am right in saying that the Ayrshire Cattle Breeders' Association are unanimous, or nearly unanimous, in favour of the removal of the restrictions?—Restrictions on export, not on import. The Ayrshire Cattle Breeders' Association have no interest whatever in the import of animals; they do not desire to import any; they desire to export them. I think what they desired was that by some means they should have special treatment, and be allowed to export their cattle even when outbreaks were appearing in England. I am Vice-President of the Ayrshire Cattle Breeders' Association, and I have no knowledge of any step that has ever been taken to promote the import of cattle, or to ask for a relaxation of the conditions on the import of cattle.

5905. You are, of course, aware that a deputation waited upon Mr. Runciman, and upon certain Members of Parliament, from the Ayrshire Cattle Breeders' Association?—Yes.

5906. In the autumn?—Yes; but that was about quite a different question. It had nothing to do with the import of cattle. I know all about that, and I can tell the Committee if they would desire it; but it had nothing to do with the import of cattle into Scotland. It was purely a question of export.

5907. As a matter of fact, they did give opinions with regard to the possible relaxation of the present restraint upon import; but, according to you, if they said that, it would be for fear of any corresponding restrictions being placed upon export by foreign purchasers?—They believed, rightly or wrongly—in my opinion, wrongly—that if Scotland were made a separate administrative area under the control, in respect of disease, of a separate Board of Agriculture, instead of the British Board of Agriculture, the restrictions on the export of Scottish cattle which then existed would be removed. That was their point. They had no view or interest in connection with the relaxation of import trade relations.

5908. I am very glad to hear that. With regard to the restrictions over a 15-mile radius from an outbreak, as I daresay you know the Board impose: When an outbreak of foot-and-mouth disease occurs, would not that, in your opinion, be somewhat excessive in the valleys in Scotland? Supposing you had an outbreak in the Highlands, we will say north of Perth; would not that appear to be somewhat excessive in view of the small danger of the disease being carried across the mountains?—I should have thought that in the north of Scotland, with the sparse population, a wider area would be required than, let us say, in Ayrshire, where the farms are small and the population close. We speak of this matter in Scotland without having had experience of these restrictions, and they may quite well appear differently to the people upon whom they are imposed. All that we say is, that we are satisfied with the admirable success which has attended the administration of these restrictions, and we do not wish to see that in any way interfered with.

5909. You do not think if you had several outbreaks in Scotland there would be any resentment shown against the enforcement of the present area?—It is perfectly possible that the persons affected might feel a grievance. I quite admit that we are looking at the thing perhaps from the broader point of view, but the other point of view from that occupied by persons who have had these restrictions imposed upon them.

5910. Quite so. Agricultural public opinion would favour the maintenance of the present restrictions?—Yes, that is the present view.

5911. With regard to this hay and straw, that you

say, to your knowledge, goes sometimes back to the farms; for what purpose would it be used on the farms; for litter or for feeding?—For litter.

5912. Is any research going on at the present time, do you happen to know, in Scotland, into diseases like foot-and-mouth disease?—I am not aware of any research into foot-and-mouth disease. It is part of the evidence of the Chamber that we think a special investigation of this subject is called for, and I rather think Mr. Runciman has intimated that such an investigation is to take place.

5913. You have an Agricultural Department as well as a Forestry Department at Edinburgh University, have you not?—There is a Chair of Agriculture in the Edinburgh University, but agricultural teaching is chiefly done in the Agricultural Colleges, of which there are three.

5914. Is there any scientific investigation or research going on at these Colleges?—Yes, but this question has not been taken up.

5915. But into any animal diseases, do you happen to know?—No, not into diseases, so far as I am aware.

5916. Might it not be a good thing to obtain a special grant out of the Development Fund, through the Board, in order to pursue such investigation?—The Colleges have applied for grants for this purpose this year, and when these grants are forthcoming, as we hope they will be, then we hope there may be a considerable extension of research of all kinds.

5917. You yourself would favour research being conducted, in Scotland, into these diseases?—Research generally, but I would take the view that centralisation and specialisation are of the very essence of research, and that each subject ought to be detailed to one or other of the institutions so that there may not be a waste of effort by spreading it. I should say that these are questions, of course, upon which I am merely expressing a personal opinion; they have not been considered by the Chamber.

5918. With regard to quarantine, do I understand you to say, that in your opinion foreign purchasers would not be satisfied with a quarantine station controlled solely by the State; they would prefer to express their own opinion as to freedom from disease of the animals subjected to quarantine?—I think that foreign Governments would be slow to abandon their own quarantine unless they had some means of assuring themselves of the efficiency of ours; and unless they were to abandon their own quarantine I see no great advantage in duplicating that quarantine by having it at the port of export, as well as at the port of import.

5919. It is your opinion, as it certainly is mine, that probably the Argentine, Canadian or American importers, purchasers, would prefer to express their own opinion as to whether or not the quarantine is effective?—I have no information, but that is my opinion for what it is worth.

5920. I am rather surprised, Mr. Douglas, to hear what you say with regard to the Argentine. I think, as matter of fact, the bulk of your pedigree cattle that fetch high prices have been exported to the Argentine, but I think the Argentine ports have been open to your cattle for the last six months, although closed to us in England. I think that is so, as a matter of fact. Perhaps you do not know that you fortunate Scotch breeders, in consequence of the Argentine ports being open to you, made three times the value of your stock at the Perth and Aberdeen sales that were made at Bingley Hall, Birmingham, last week?—Yes, but I was not aware that the Argentine ports had been opened; I know that the opposite is the case with regard to South Africa, the United States and Canada.

5921. You do not yourself see any danger with the land frontier between England and Scotland of differentiating in this matter between the two countries?—I do not think I quite understand.

5922. In other words, you told us just now that the flow of cattle and other stock was southwards rather than northwards?—Yes, that is the case speaking generally; I mentioned certain exceptions.

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MR. CHARLES DOUGLAS.

[Continued.]

5923. Yes, and I think it was for that reason that you think the Argentine and other Governments were justified in differentiating between England and Scotland in the opening of their ports?—I do not think I expressed an opinion as to the justification. I gave my view of a reason that might have actuated them. I rather think that the Irish Department treated Scotland somewhat more favourably than England.

5924. May I ask one question with regard to the veterinary profession; where do you draw your veterinary surgeons from in Scotland?—We have two colleges in Scotland.

5925. Where are they?—One in Edinburgh, the other in Glasgow; both pretty fully equipped colleges.

5926. And do they supply your local authorities with veterinary inspectors?—Very largely.

5927. (*Mr. Richardson Carr.*) There is only one question I wish to ask. Going back for one moment to this hay and straw for packing, do you not think that the greatest danger from hay and straw for packing is when it gets on to the farms through it being used in towns for small stables first and then as manure. There is not very much of it goes direct on to the farms, is there?—I think that probably a larger proportion finds its way on to the farms as manure than as hay and straw.

5928. That is what I meant?—I do not know bacteriology sufficiently to know to what extent the danger is reduced by the substance having lain in a heap of manure for some time; I would not like to speak on that at all.

5929. It goes more on the farm like that than fresh?—I think rather more.

5930. With regard to the research work you mentioned, did you mean that you thought it would be wise to have a research station with regard to foot-and-mouth disease?—What I meant was that it seems to me a subject of this kind ought to be investigated at one place in the United Kingdom, because there are no local conditions affecting the scientific work regarding it; there is not a separate nationality in foot-and-mouth disease and I think all that work should be concentrated.

5931. But do you mean that you think it would be wise to have an experimental station in Great Britain for foot-and-mouth disease?—I think an experimental station for foot-and-mouth disease would be an exceedingly dangerous thing to have in the country.

5932. That is what I want to ask you; whether you think when foreign ports are all closed to us directly we get one case, would we not have foreign countries very much against us if we were breeding it?—I think research could be conducted much more prudently in other ways than by having an experimental station in this country.

5933. You would not like an experimental station in Scotland?—No.

5934. (*Mr. Morrison.*) You are the only witness from Scotland?—I believe so.

5935. You are sent up by the Scottish Chamber of Agriculture; do you know the feeling in the Highland Society also?—Yes.

5936. You are a Director of the Highland Society also?—I am a Director, yes.

5937. And you took special care to find out what the farmers in Scotland really were thinking in this matter?—Yes.

5938. In the replies sent to the circular did you get any suggestion adverse to the evidence that you propose to offer?—I think there was one criticism which was partly based on a misapprehension; one member of the Chamber thought it was proposed that a separate investigator should be appointed to do this work, and that he should not be one of the staff of the Board of Agriculture. The Chamber do not propose to offer any opinion as to the selection of the person to which this work should be given, whether he should be outside or inside the Board of Agriculture staff, and I have not offered any opinion on that question. I think that was the only criticism so far as I remember.

5939. So that we may take it that your evidence is unanimously approved as far as you can ascertain in Scotland?—Yes; so far as I have put it forward on

behalf of the Chamber. I have expressed certain personal opinions—but on these points undoubtedly.

5940. You mentioned one or two points that you think might be handled. As regards the carcasses of calves imported in their skins, you recognise the danger, but so far as I could make out, you advise they should be simply prohibited from being imported; is that your suggestion?—I do not say that veal could be treated differently from other meat imported, but I think the import of animals in their hides with their heads and feet, from countries where foot-and-mouth disease is rampant, is obviously imprudent, and if they cannot be imported without their skins, then I think we should have to do without them.

5941. We have had evidence that it would ruin the trade to import them without their skins. That being so, would you advocate the exclusion of these calves from infected countries?—Yes; they seem to me to be a very likely means of communicating disease. I cannot conceive that it should be impossible to import them without their skins; it might be a little more expensive.

5942. Alternatively it has been suggested that an efficient system of inspection at the port of embarkation should be undertaken; do you think that would be an improvement?—Of embarkation?

5943. Of embarkation; at the port of embarkation?—I have no doubt that would be an improvement. I am not sufficiently informed of the veterinary facts to know whether such an inspection could be adequately carried out without great expense.

5944. But, if such a system of inspection were instituted, do you think that would meet the objection in Scotland?—It would be an improvement.

5945. The two points connected with that inspection I suppose would be, first, that the animal had no symptom of disease at the time of being put on board ship; and that there was evidence that it had not come from an infected farm?—Yes.

5946. These two points would require to be testified to?—That there should be as strict a regulation of them as there would be in the case of an animal being moved from one part of Britain to another.

5947. And you think that, theoretically at least, it is a great source of danger to have these calves brought in as at present?—Yes.

5948. As regards the hay and straw, the danger may be recognised, but what is the remedy?—I do not see any complete remedy except exclusion; the substitution of wood-wool and materials of that kind.

5949. If the disturbance of trade caused by the substitution of wood-wool were thought to be greater than the risk we ran, I suppose you would not advocate that substitute?—Well, of course, no single industry is entitled to assert itself against all the other industries of the country. We put forward our own view and it is for the Committee to balance these matters.

5950. But you have no other suggestion to make in that connection except the substitution of something for packing hay and straw?—I do not think anything else would be completely effective.

5951. You think there is a feeling in Scotland that at the present time sufficient work is not being done in connection with foot-and-mouth disease, and other animal diseases, to clear up points that are yet uncertain?—I think there is a very general desire to have more research of a veterinary kind into diseases. There is always, of course, a certain amount of complaint in connection with restrictive regulations.

5952. In a general way you would advocate that more money should be spent in this direction?—Yes.

5953. But have you any definite proposal to make as regards how that might be done within the United Kingdom?—I think that foot-and-mouth disease in itself can probably be better studied both by observation and by experiment in other countries where it is very prevalent than in this country where it is exceedingly rare.

5954. You do not make a definite proposal, but you would advocate generally that the Board of Agriculture should undertake more research in connection with animal diseases than has been the case in the past?—Yes.

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5955. As regards an experimental station, do you think there would be any objection to such a station in India?—I am afraid I am not in a position to say.

5956. Do you think, then, that it would meet the needs of our position to have an experimental station in India?—Well, again, I am afraid I should very much prefer to know Mr. Stockman's view of that than to put forward my own.

5957. (*Sir Bowen Bowen-Jones.*) There is just one question I should like to ask you in reference to the prohibition. Short of the prohibition of hay and straw, you have only put forward one suggestion as being likely to prevent foot-and-mouth disease coming in; that is the use of wood-wool as a substitute for hay and straw packing. If wood-wool was used on a farm where infection existed, would there not be a danger from the use of that?—But wood-wool does not normally come from a farm; hay and straw does.

5958. But eggs that are packed come from a farm?—Yes.

5959. There is only one other point I wish your opinion upon, and that is whether you thought that the compulsory destruction of hay and straw would not remove a portion of the danger?—It would be very difficult to enforce.

5960. Exactly; I know that.—Because packing material often goes direct to private houses, and then finds its way into the police manure.

5961. Exactly. We recognise the difficulty, but do you think that if it were made compulsory under penalties to destroy the hay and straw packing, that that would remove one of the sources of the danger to

some extent?—It is, of course, evident that if such a law were successfully administered it would reduce the danger very greatly, but I doubt the possibility of administering it.

5962. Then you see you must fall back on total prohibition?—I do not see any complete solution short of that. I agree that circularising farmers, and so on, would palliate the danger slightly, although the danger would always remain of hay and straw coming to the farms through police manure, or through town stable manure. And I, of course, agree that in so far as the Government might be successful in obtaining the destruction of foreign hay and straw, there would be a reduction of the danger, but I do not see any complete preventive except exclusion.

5963. That, you told us, was distinctly the expression of the view of the agriculturists from the agricultural side?—That is the only view that I am here to express.

5964. I entertain the same views as an agriculturist myself, but agriculturists' views cannot prevail against the general interest of the public if these interests are greater than the agricultural interests; therefore, I wanted to get at some medium by which we could reduce the danger without causing so great a disturbance of trade. For those reasons I have put these questions.—Yes, I quite understand.

5965. (*Chairman.*) As a matter of fact, Mr. Douglas, I suppose you consider that the import of hay and straw is the most dangerous source of infection that we have in this country as a carrier?—Yes. I think probably it is so.

Very well, Mr. Douglas; many thanks.

The Witness withdrew.

Colonel BENJAMIN BECKHAM SAPWELL, of Sankence, Aylsham, Norfolk, representing the Norfolk Chamber of Agriculture, called in and examined.

5966. (*Chairman.*) Colonel Sapwell, you have come here to-day to represent the Norfolk Chamber of Agriculture to give evidence before us?—Yes.

5967. And you have been for a good many years—20 years I think—Chairman of the Contagious Diseases Committee of the Norfolk County Council?—Not chairman for 20 years.

5968. But you have been chairman for several years?—For several years; since Mr. Clare Sewell Read died.

5969. And you have in the past had a good deal of experience about foot-and-mouth disease yourself?—Yes, sir.

5970. You have had it on your farm?—Many times.

5971. In the year 1900?—Yes, that is getting at the end. I had it many years before 1900, but in 1900 there was a very big outbreak which is continually referred to by the Board of Agriculture, the outbreak of Freethorpe and Wickhampton, of which you often hear.

5972. When was it that you had it on your own farm?—I think the last time I had it would be somewhere about the middle of the 'eighties, 1883, 1884, or 1885.

5973. When we had the big outbreaks all over the country, you mean?—Yes; on that occasion every bullock on the farm had it, and the cows, the pigs, and all the fowls. I see it is generally stated that poultry are not liable to it. All I know is that some 50 or 60 fowls were all going about with their mouths affected; very much like about two years ago the wild pigeons had something, it looked to me; I did not notice it particularly, but I know they all had it, and a great many of them died of it.

5974. Did the veterinary profession in those days consider that the fowls had really the foot-and-mouth disease themselves?—I did not have a veterinary surgeon. I understood the matter well enough myself.

5975. You did not have a veterinary surgeon?—No. Every year I had had it perhaps for 15 years before that. In fact, there was never a year we had not had it. When the Irish bullocks came to Norwich we expected them to have foot-and-mouth disease, and we used to isolate them, turn them on to a meadow to let them lie there till they got over it.

5976. (*Mr. Richardson Carr.*) The Irish bullocks?—I do not say that the Irish bullocks brought it from Ireland; they got it in the railway trucks, but the Irish bullocks always had it. They picked it up, no doubt, on their way, because if they had had it in Ireland they probably would not have had it in England a second time.

5977. (*Chairman.*) You are talking of the 'eighties and before?—The 'seventies and 'eighties.

5978. I see you say anybody who has had experience of foot-and-mouth disease can diagnose that disease?—I should think so. There is that peculiar smacking of the lips. I do not know whether you have seen it yourself, sir. I do not think, when it is developed, of course, you could mistake it.

5979. You are Chairman of the Executive Committee in Norfolk, and your veterinary inspectors are appointed by your local authority?—A great many of them are all over the county.

5980. Would you, as the head of the Executive Committee of the local authority, see any objection when you had to make further appointments of veterinary inspectors, that they should have the approval of the Board of Agriculture also? Would you, as a local authority, be jealous of that interference on the part of the Board of Agriculture?—I should not personally, because we get on particularly well with the Board of Agriculture; but I think probably some members—you know what local men are—might say: Why, are we not capable? And I think practically we are capable. It is not generally supposed that birds have it. I gave you that instance, and I will give you another. It is not supposed that human beings have it. We used to say so when it was rampant, but I know a man who died of foot-and-mouth disease. He was weak; he had diabetes pretty bad; he used to drink nothing but milk; he lived on milk. He went to London when it was rampant, and came home, and his doctor and his family to this day say he died of the disease.

5981. In what year was that?—It would be in the early 'eighties, yes.

5982. Now, as regards this latest outbreak we have had in Norfolk, at Freethorpe and Wickhampton. You put it down that this was spread by the cattle

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eating the hay?—If you recollect, we first of all cured the outbreak, or thought we did, and then we were very much astonished at a fresh outbreak coming a few weeks afterwards, and when we went into it we considered that was caused by the men when coming out of the yard brushing their feet against the side of a haystack; that hay was consumed by other bullocks, and that we believe—that is our record—caused the second outbreak.

5983. That was before the days when so many strict precautions were taken by the Board of Agriculture?—Yes.

5984. There would not be that fear now, under the strict regulations of the Board of Agriculture, of it breaking out in that way?—Oh, no; no fear of that.

5985. Have you, as representing the Chamber, any views to suggest as regards this question of imports which are brought in, and which may be a source of bringing in disease from infected countries?—First of all there are the holds of ships and the railway trucks. Diseased hides which come from places may be in the hold of a ship, and the next time there is a cargo of linseed cake or cotton cake in the ship, and, of course, the bags rub against the sides of the ship, and eventually they get into the farm. That applies more especially to anthrax really than foot-and-mouth disease, but still it is quite possible for the two of them. No doubt it would be a most dangerous thing to import hay and straw as such for feeding, and there is a great deal of danger, and I believe real danger, about the hay and straw packing.

5986. Before you go on with that I should just like to ask you a question about the holds of ships and the hides. Would this meet your view: supposing this Committee recommended that all hides should be disinfected at the port of embarkation. That would meet your view as regards, I suppose, the holds of ships and lorries and trucks, because they would be disinfected on the other side?—Could they be effectually disinfected?

5987. That is what we are trying to find out?—They would have to be done something to with vapours of formalin, because you cannot disinfect them by washing them over; you would be sure to leave creases where infection would remain.

5988. Although our Reference is only as regards foot-and-mouth disease, we are taking into consideration also, to a certain extent, anthrax. Formalin would not kill the spores of anthrax?—No, that is just it.

5989. So it would have to be a stronger solution than that?—Yes.

5990. But my point is this: Suppose we recommended that all hides should be disinfected at the port of embarkation with a strong solution which we have had brought before us, that would do away with a great source of danger in this country?—Yes, but I would go further and disinfect the holds of ships and the railway trucks as well.

5991. But if you disinfect at the port of embarkation, these things would come in disinfected?—That is the question. If you are satisfied that they are efficiently disinfected; to make doubly sure: that was my reason for suggesting the disinfection of the holds.

5992. Now, come to the question of hay and straw for packing. I ask you the same question which I asked Mr. Douglas; you are very strongly opposed to hay and straw for feeding purposes coming from infected countries being allowed into this country?—Oh, certainly.

5993. You are very strong on that?—Very strong.

5994. Would you agree with him that it is rather anomalous that we bring in hay and straw for packing from foreign countries where we prohibit hay and straw for feeding?—Why could not the small quantity of hay and straw that comes in for packing be burned?

5995. But are you perfectly sure that the hay and straw for packing is a very small amount?—Yes, sir; I do not know that it is small, but it is a danger.

5996. It is a danger, I grant, but it is not a very small amount?—No.

5997. Do you suggest, then, that it should be burned?—If it were kept, we will say, for merchandise, I

would let it go backwards and forwards if you like for packing things; but last of all, when it is worn out, if I may use such an expression, let it be burned. That would not be a difficult matter. Let it be used for packing things half a dozen times and go backwards and forwards, and there would be no particular danger as long as it is kept in the warehouse. How does it get out on the land? You take my case; things come packed in straw; they are unpacked, the straw is carted out on to what is called the muck-heap from the stables. Well, my straw does not go back to the land from the stables, because it is only half made into muck. That straw is carted down and litters the bullock-yard. My horses' straw is, to use a Norfolk expression, jammed twice. No doubt other farmers and people do the same. The straw comes to my place, it is put on to the heap of litter outside the stables; that is carted to the farm to litter the stock, and then if there is any of the saliva from a bullock or any of the matter from its claws upon it, it is dangerously infectious.

5998. What you suggest then on that is that the hay and straw which is used for packing, which you say does not go back in the crates, when it comes in should be burned?—I do, sir.

5999. You know as well as I do that in every village in England there is some of this hay and straw comes as packing; you are going to have fires all over the country; what about your insurance?—I am looking at it entirely from an agricultural point of view. If you look at it as a statesman; I am only looking at it as a farmer; I am not sure that it is practical; you will decide that.

6000. From your point of view as an agriculturist, you say that hay and straw for packing purposes is one of the most dangerous sources for bringing in the disease?—I do.

6001. Have you any opinion about carcases of calves being imported in their skins?—Of course, I know about them from what I have read and what I have heard about them, and, of course, that is a source of danger. As far as inspecting goes I do not see what inspecting can do. You may look at the calf and you may make sure it had no foot-and-mouth disease because it would not be a fat calf if it had; but then it might have been handled by men who had been associated with cattle that had foot-and-mouth disease, the saliva or the pus might be attached to the skin of that calf, but no inspector in the world could see it.

6002. Is your Committee perfectly satisfied, when outbreaks do take place in this country now, with the action of the Board?—I am personally.

6003. Are you satisfied with the restrictions, although, as I said before, it is really outside our Reference?—Yes, I think so. Of course, there will be a row in Norfolk when you have your 15-mile radius by the people who live 12 or 14 miles off, but if you made it 12 or 10 it would be the same. We have to put up with that. And it is the same with the swine-fever areas, with a man at the outside of the area. There is no real solid strong objection. They could not come to the Chamber of Agriculture and carry a resolution that these areas should be done away with; certainly not.

6004. You and your Executive Committee are perfectly satisfied with the Regulations which take place now?—Yes, sir.

6005. There is one other question. I suppose from your précis that you are rather surprised that we have not more outbreaks of foot-and-mouth disease in this country?—Yes.

6006. Considering the state of foreign countries?—Yes. I remember Mr. Read making the remark that if we were so placed that we got it stamped out we shall always have little outbreaks spitting out. Those were his words. And, as I say, it is so easy to be carried by birds in their feet, in their feathers, and in their excrement, and as, I believe, having the disease themselves. I believe scientists do not agree with me. I am only telling you what I saw and know; I saw a yard of fowls all having it, and I believe what has happened once may happen again. But that was not confirmed by a veterinary surgeon, because, as I say, I did not employ a veterinary surgeon.

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6007. (*Mr. Morrison.*) You agree that the administration, when an outbreak occurs, is quite effective at the present time?—As effective as it is humanly possible to be.

6008. You cannot suggest any improvement?—No.

6009. Do you think that the greatest danger, then, is the possibility that an outbreak may not be at first detected?—I do not say the greatest danger; I think there is a danger of that, certainly.

6010. Do you think there is a great danger?—I do not say a great danger, I think it is a danger.

6011. Do you think that a farmer who had never seen the disease would be sure to call in his veterinary surgeon in time?—I think it is so marked—the disease—when it has developed, that anybody who had never seen it before would be able to say it was foot-and-mouth disease if he saw it in cattle.

6012. But not in sheep?—I think you might have it in sheep, and no one but a veterinary surgeon could tell, because it does not affect the sheep's mouths, only their feet. You find a lot of sheep all down. You say, "What a bad attack of foot-rot!" As a matter of fact, it is foot-and-mouth disease. If they have it in their mouths especially, they have it very slightly. Therefore, it is quite possible to have an outbreak for some time in sheep without it being diagnosed. I could not promptly diagnose it in sheep myself, I am sure.

6013. That is really the question I want to ask. Do you think it would be of any use if the Board of Agriculture—at a time when foot-and-mouth disease was extremely prevalent on the Continent—were to make a point of repeatedly sending down little handbills, which could be distributed, and perhaps posted up upon farms, and so on, calling attention to the danger of an outbreak, and giving the symptoms, so that the farmer might be on the outlook. Would that serve any purpose?—My experience of handbills is not very encouraging. We have sent a great many out in Norfolk about other matters, and a fortnight afterwards we find people coming and asking what they are to do. A week before they had had the same thing written. They get into a wastepaper-basket. They do not get to the rather unintelligent men, the men who do not read. They are the men we would rather want to get at. They are the men who do not read them.

6014. Have you any suggestion, then, to make as to how farmers, and perhaps local practitioners who have not seen the disease, might be better acquainted with it, so as to be able to detect it when it occurs?—I cannot. If you were to have the handbills you say that would be all right, if they got them and read them, but I do not believe they would. They might read them, and they would put them away, because they say, "There is no disease in my neighbourhood; I have not heard of any."

6015. You think, for instance, that perhaps a local lecturer going round the country or the Eastern districts—which are, perhaps, more liable than others to have the disease—would not be of any use?—I do not believe people would come to hear him. Suppose you had a lecturer in Norfolk next week, no one would go to hear him. They would say, "We have no foot-and-mouth disease in Norfolk. We are too busy to go." That is what they would naturally say.

6016. (*Major Dunne.*) It has been suggested by one of the witnesses we have had before us that the administration of the present Regulations issued by the Board of Agriculture should be more in the hands of the local authority rather than in the hands of the central authority, the Board of Agriculture. I think the reason why this witness brought forward this idea was that he thought the local conditions, such as the topographical conditions of the country, would be better understood locally than by the central authority, and that certain things that might be imposed by these Regulations would be better administered if they were administered by the local authority rather than by the inspector of the Board of Agriculture. Do you agree with that view, or would you rather that the administration should remain as at present, in the hands of the central authority, the Board of Agriculture?—I think I should prefer it in the hands of the central

authority. You see they have got the experts. They know all about it, and in regard to this question of areas and other Regulations, I have never found the Board being otherwise than willing to meet us with any reasonable things we have told them. If we said we are thinking you have got this too wide, they look into it and alter it. I find in Norfolk that the Board are most considerate to us, and that any reasonable request we make we get granted. These people would be asking us to send men who did not know, at the local expense, when we can get men who do know, at the Imperial expense. Well, I prefer the men who do know, at the Imperial expense.

6017. I quite agree with that view personally. I was only trying to find out whether you, as a local authority, would have liked to have had more of the administration in your own hands—being aware of all the local conditions—than leaving it in the hands of the central authority, and I am very glad to hear from you that you propose leaving it where it is, where we know it is so very well administered?—Suppose there was an outbreak in Norfolk next week and the local authority had to deal with it, I do not know where I could put my hands on the people who could deal with it. There are some first-rate veterinary surgeons in the district, I would have to ask them. They would have to find men to do it, whereas if I telegraph to Whitehall Place, by the next train there are men who do know, down on the spot. You cannot beat that, in my opinion.

6018. (*Mr. Bathurst, M.P.*) You are quite convinced that some years ago when you had foot-and-mouth disease on your farm, the fowls had it too?—I am, sir.

6019. Do you remember what the symptoms were?—Did you see wood-pigeons, about two years ago, all over the country with a diseased mouth, a yellowish matter growth? They were very common in Norfolk and I believe in other parts too. They look very much like that.

6020. Do you remember, was there any discharge from their mouths?—We did not trouble very much about them. Some got better and some died, and there was an end of it; but it was the fact that it came simultaneously with the foot-and-mouth disease. Everything at that time on the farm had it and we have never had it before or since.

6021. I think you are aware that during the last two years, in the early spring there has been an increase of wood-pigeons from Scandinavia?—Yes.

6022. I do not know whether you have had them in Norfolk?—Oh, yes.

6023. I think they passed over the south-east of England and settled somewhere in the south of England. Do you think it likely or possible that these wood-pigeons brought the disease from the Continent?—Well, they came from Scandinavia. I believe, in Denmark, in the north, they are pretty free. I do not say the wood-pigeons brought it. I should think it more possible that a rook, feeding on the marshes in Holland or Germany or France, would walk into some of the saliva from the mouth of a beast, then fly on to our marshes and feed there and affect the grass; or it might have the disease itself, and so affect the pasture so that the grass which is eaten by the bullocks would catch it. Of course, I have no special knowledge and so many of those wood-pigeons were diseased. I do not say they brought foot-and-mouth disease, or we should have had it all over the country.

6024. It is rather a curious coincidence, assuming that birds can have it, that we have had an unusual plague of wood pigeons, which commenced just about the time that foot-and-mouth disease reappeared in England?—Yes.

I am not sure, but I think the disease does exist both in Norway and Sweden to-day.

(*Chairman.*) Not Norway.

6025. (*Mr. Bathurst, M.P.*) In Sweden. I think then you also told us, which is very interesting, that you knew a man who had foot-and-mouth disease?—Yes.

6026. Do you remember what the symptoms in his case were?—I know this, it was said that he was enfeebled because he had diabetes, and that having

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diabetes, he lived practically on milk. He went to London to sell some of his own or his friends' beasts. He was a man in a nice position, and well connected with a good old Norfolk Yeoman family. His brother-in-law was a great friend of mine, and his family also, and they thought that he died of foot-and-mouth disease.

6027. The doctor thought so?—I believe so. I am speaking of some years ago, but they all thought there was no doubt about it.

6028. That is the tradition in the family in the district?—Yes.

6029. You also said, which I thought became very interesting, that you think that in sheep the disease may be mistaken for a foot-rot?—It used to be in the olden times continually, a man would have foot-and-mouth disease on his farm amongst sheep, and not know it till he would call in the veterinary surgeon, and then he would tell him he had got a very bad attack. When he found the sheep were down for a long time, and did not get up, he would send for his veterinary surgeon, and he would say this is foot-and-mouth disease.

6030. Do they feed on their knees?—When they were down they would be practically off their feed, some on their knees, others lying.

6031. Is the appearance of the feet very much the same?—Oh, yes, the appearance of the feet. You would have the lesions between the claws. As a rule you will find, if you consult Mr. Stockman further, they do not show it anything like cattle in their mouths.

6032. I suppose you could not trim their feet in same way as you do for foot-rot?—I have not the least doubt that was done till it was found to be foot-and-mouth disease.

6033. Do you think it is possible, with the amount of foot-rot which is prevailing in the various parts of the country to-day, that some of it is foot-and-mouth disease?—No, because if so you would find that if you had your sheep down with foot-and-mouth disease you would very soon have some of the cattle catching it, and that would tell us what is the matter.

6034. You suggested just now, in connection with hay and straw used for packing, that if it conveyed the disease it was probably through the muck-heap?—Yes.

6035. I do not know if you are aware of it, but some of our scientific experts have told us that decomposition and heating would both destroy the germ, that would rather stand in the way of your theory, would it not?—No, it would not, because in the muck-heaps, of which I speak, there is no heating going on. I keep thoroughbred horses, for instance, and we do not keep the straw under them till it is made into what you call muck. They are cleaned out every morning, and what you call the muck is really only soiled straw. There is no heat in it, all that would be thrown in litter from the house, and the next morning it is carted down to the farm to a bullock yard or shed, or anywhere where the cattle rejam it, because in the state it comes from our cattle it would not be fit to go on the land.

6036. It is put into the farmyard, then jammed by the cattle, then ultimately rots there?—Yes.

6037. I was interested to hear you say that if any question of removal of restrictions came up at your Chamber of Agriculture, in your opinion, a resolution would be carried—I think you said unanimously—against relaxing the present Regulation?—That is my opinion. The Chamber have told me to come and express their opinion. We have never had a resolution to that effect, but knowing the feeling we do not want the country to be set ablaze with foot-and-mouth disease now.

6038. And that is recognised by all your local farmers?—I think so.

6039. I was surprised to hear you extend that to swine fever. Still it is hardly within the terms of our reference?—I did not extend that to swine fever; I was saying, simply, whatever the size of your area is, 15 miles, 10 miles or 12 miles, you would always have, as we do, with swine fever, the outside people grumbling. Please do not imagine I am expressing any opinion,

because I should have to go into that much more fully.

6040. You say in your précis, which is also, in the light of some of our evidence, very interesting, that while foot-and-mouth disease is very prevalent in England it only lasts a short time, and we never hesitated to turn stock on to a pasture soon after the infected beasts had been removed. Now, I take it from that that if you did turn sound beasts upon such a pasture, in your opinion, they would not catch foot-and-mouth disease?—After a reasonable time, say a month. In the olden time probably we did not wait so long as that; in the olden time the beasts would come home, they would be put on a particular pasture, they would have the disease and they would get over it, and that did not matter very much if we kept it away from the cows. The cows were injured in their udders by it. Very often a cow was spoiled by it. After a time these were shifted on to the farm; they did not affect those on the farm; in a very short time they were mixed up with the others; the next lot would be mixed up on the pasture. Therefore, I gather the infection does not last a very long time.

6041. What, as a result of your very valuable experience, do you consider would be sufficient time to elapse in order that cattle might go on that pasture without suffering any damage?—Subject, of course, to your scientific advisers, I should think about a month would be quite enough, but that, of course, is only a rough opinion that I have formed from practice.

6042. Your practical experience is valuable because the scientific experts are not clear to a few weeks?—Take where this disease was virulent at Wickhampton and Freethorpe, there has never been an outbreak since. On an adjoining pasture there was some years ago anthrax, and the things were not cremated in those days, and not buried deeply, because if you bury deeply in marshes you very soon come to water; and they were not buried in lime. There is a marsh where anthrax breaks out every year, so that you can hardly let the marsh; and the unfortunate owner to let it at all has had to say that she will pay the loss if the tenant has any beasts down, and every year there are one or two beasts with anthrax. I have been consulted as to what is the best thing. The only thing I know is a thick coat of lime which would be so thick that it would destroy the pasture and everything else probably. That is the difference between the two diseases.

6043. Anthrax is a much more persistent disease?—The spores of the anthrax live and the worms get anthrax and they bring it up, and their earth casts get attached to the grass.

6044. You expressed the opinion that in the case of a valuable herd, I should suppose a pedigree herd?—Yes.

6045. You suggest that isolation and cure might be attempted instead of slaughtering out?—I am very strong upon that point. The isolation is only a question of expense. If you go to enough expense, set off a certain number of men only to attend to the things, these men are only to wear certain clothes which you are prepared to pay for, and there is to be a cordon round them which you are prepared to put up with; suppose you say we will spend 100*l.* or 200*l.* about isolating this herd, it is far better than destroying pedigree animals, many of which are worth 100*l.* each or more, perhaps 400*l.* or 500*l.* It is a question of £ s. d., and I believe, as infection is so soon over, it would be a matter of a couple of months, or three at the outside. In the case of a valuable herd I am sure it would be economy, and taking all the proper precautions, under the advice of the scientific advisers, I think a valuable herd might be isolated and so saved, rather than putting the country to the enormous expense of hundreds of pounds for things of that sort.

6046. But would there not be a danger of this stringy saliva that we have heard so much about being carried by the wind in the meantime to other premises and starting the disease there?—Yes; but then you isolate the thing and you have a cordon round it as you would if you destroyed them. There would be a

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danger, but if you had your watching every day, it would be such a small danger, I think it would be worth it,

6047. I think you see what I mean. Supposing you have got disease existing at the centre of your radius, and it is carried by the wind, we will say two miles off, and it sets up the disease there, and it is again carried by the wind from there still further afield, the whole advantage of your establishing a radius will disappear?—Yes, but in the past we did not find that that happened. In the past we found that if we isolated the herd in all our Norfolk cases we did not have it going on. In the old days when the regulations were slack, not as they are now, we found practically if you isolated a herd that they soon got well.

6048. You do not think that carriage by wind is a common way of spreading the disease?—I do not say that, because I think it might. It might be carried by flies, for instance. We have been experimenting on a sewage farm with flies, and we have been colouring the flies, and I find that a fly can go about one and a half miles, or a couple of miles a day; and if a fly has been enjoying himself on saliva from the mouth of a foot-and-mouth diseased bullock, and then the wind blowing it two miles to another, I do not know a more easy method of extension. Dr. Monckton Copeman, of the Local Government Board, came down and coloured the flies on this manure, and they were found in twelve hours, or I will say certainly twenty-four hours, one and a half or two miles away—the same flies—and, of course, you know they are great carriers of infection.

6049. (*Mr. Lane-Fox, M.P.*) Your experience in the past was that not much notice was taken of this disease?—In the past. Oh, notice was taken of it.

6050. But it did not trouble you?—We put it down to one of the plagues we have to suffer with. We took it in the olden days. We had to make the best we could of it.

6051. You do not mean to suggest that the fuss we make about it now is unnecessary?—Oh, on the contrary. Mr. Clare Sewell Read—I value his opinion very highly—and I may call myself a pupil of his—was always most

anxious to stamp it out, as you are doing now, by slaughter. Practically you are doing what Mr. Read suggested. But I know his opinion was that if it attacked a valuable herd slaughter might be too expensive, and that isolation might be a cheaper and better plan.

6052. (*Chairman.*) One word more, Colonel Sapwell; you mentioned the question of milk just now. As regards that, there is a certain amount of foreign milk comes into this country. Do you think that is a source of danger?—Yes, sir, it is; certainly. Some of this condensed milk, of course, is a source of danger, except that it is very slight, because, as a rule, it does not go direct. If it went it would be a source.

6053. Milk from a foreign country, from an infected country, you think would be a source of danger?—I have no doubt of it.

6054. As a practical man, have you got any suggestions besides what you have mentioned to-day in your précis to lay before this Committee as regards what steps we can take without a great dislocation of trade? Have you got any other suggestions to make which we could recommend?—No, sir. If I had the power to do anything I liked, I do not think I could advise anything being done better than you are doing at the present time. Subject to the things I have said, the disinfection of hides, and the holds of ships, and the trucks on the railway, to prevent it being carried; possibly that applies more to anthrax than to foot-and-mouth disease, in the cakes we buy, and things of that sort, and the absolute prohibition always of hay and straw from the Continent, and, if possible, that is more for you than me—I do not know that it is possible—the burning of packing. I do not think it would be much of a hardship after it had been worn out, when people throw the stuff on to the dust-bin. It would not be a great deal more trouble to burn it than throw it on the dust-bin. Till the time it comes to the dust-bin, I do not see any reason why they should not keep on using it.

Thank you, sir.

The Witness withdrew.

Professor H. R. PROCTER, Leather Industries Laboratory, The University, Leeds, called in and examined.

6055. (*Chairman.*) You have kindly come to give us a little evidence upon the question of this industry—you are Professor at the University of Leeds, I think?—Yes, that is so.

6056. And manage the Leather Industries Laboratory?—Yes, I am a Professor of Applied Chemistry, and Leather Industries is my particular department.

6057. You have heard, no doubt, that we have had some very long and interesting evidence from Mr. Seymour-Jones upon this question of hides?—Yes.

6058. And on the question of disinfection of hides?—Yes.

6059. I suppose I may take it first of all that you have no connection at all with Mr. Seymour-Jones' experiments; you have got nothing to do with them; you are perfectly independent of Mr. Seymour-Jones?—Financially, of course, but I have assisted Mr. Seymour-Jones; if you look at Dr. Constant Wells Ponder's Report you will find that he quotes certain experiments that I have made, and I have known Mr. Seymour-Jones for a long time. I think you might regard me as a quite disinterested witness on that as on other things.

6060. Would you kindly tell the Committee a little about this? First of all, it has been brought very strongly before us that hides are one of the most important sources through which disease may be imported from infected countries, and it has been urged upon us to take steps to have these hides disinfected at the port of embarkation. Well now, will you tell us your opinion about that?—I think there is no doubt that it would be an extremely desirable thing. I can hardly give an opinion as to the possibilities of it being carried out.

6061. I wanted to get hold of the disinfection on the other side. What disinfectant would you say was

a proper disinfectant to use as regards wet and dry hides?—With regard to anthrax?

6062. I will take anthrax, because that is probably the most difficult bacterial infection to destroy?—There is no doubt that anything which would destroy anthrax spores would destroy foot-and-mouth infection.

6063. Quite so, yes?—And the only really efficient method that I know is the method that Mr. Seymour-Jones explained to you.

6064. The formic acid and mercury?—The formic acid and mercury.

6065. You have had a good deal of experience of that formic acid and mercury?—My experience has been mainly with regard to the effect of the treatment on the hides for tanning purposes. I leave the question of disinfectant entirely to Dr. Ponder who, of course, is an expert bacteriologist. I know enough about bacteriology to be able to form a good judgment as to the value of Dr. Ponder's experiments, but beyond that I do not profess. Anthrax is so dangerous an organism to handle that, of course, one does not handle it except in proper pathological laboratories.

6066. Will you tell the Committee what effect this particular solution, formic acid and mercury, has upon the hides?—The mercury will kill, of course, any organism to which you can get it really applied, but the difficulty is that the anthrax infection at least resides to a large extent in clots of blood and dried masses of that sort to which the mercury is not easily applied in ordinary solution, and besides that, bi-chloride of mercury is a thing which precipitates with many of the constituents of the hide, especially the albuminous (white of egg) constituents of the hide, and becomes converted into insoluble forms in which, of course, it is entirely ineffective. The bi-chloride of

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mercury has not the power of softening these clots and, in addition to that, perhaps it does not very readily attack the anthrax spores which are extremely resistant as you know to any chemical treatment. The formic acid as an acid has the effect of swelling the spores and swelling and disintegrating the clots of blood, and at the same time it prevents the precipitation of the mercury with the albuminous substances in the hide, so the spores once swollen and laid open, as it were to attack, are very readily killed by solutions of chloride of mercury which would not kill them if they were in their dry, ordinary condition. I think that is the theory of its action, I might perhaps add that after treatment with the formic acid very much weaker solutions of mercury bi-chloride are efficient than would be efficient if the formic acid were not used.

6067. Then do I take it from you that disinfection with formic acid and mercury is sufficient?—Oh, I think amply sufficient. Once the spores are killed as well as the bacteria, the disinfection is complete; of course, if you only kill the bacteria, the spores can develop, but if you kill both bacteria and spores you have done away with the thing entirely.

6068. Well now, for this treatment of hides, is the solution which you speak of very expensive?—No, not very. I suppose Mr. Seymour-Jones would give you some details as to the expense; probably he has gone into that question of calculation. Formic acid is cheap. Formic acid is one of the cheapest now of organic acids. Other acids could be used, for instance, acetic acid. The mineral acids are unsuitable because they are too strong. Formic acid is now made synthetically from cheap materials, and is not likely to become any dearer than it is at present. The most expensive part of the materials in the process is the mercuric chloride which is always dear, but there is nothing else known I think which is really effective in killing anthrax. Very possibly a much cheaper disinfectant might answer the purpose for foot-and-mouth disease. I have heard of mustard oil being applied apparently successfully as an antiseptic with the formic acid. There are two mustard oils: one of them is an ordinary seed oil like colza oil, and is not effective for that sort of thing, but the mustard oil which I refer to is the essential oil of mustard, the thing which gives mustard its pungency, and that is a very powerful germicide.

6069. As I said just now we are really looking into foot-and-mouth disease. Of course, we think it necessary also to look into this question of anthrax. Whatever killed anthrax, as you say would kill foot-and-mouth disease, therefore, if we did anything as regards disinfection of hides, naturally we should like to kill two birds with one stone and kill anthrax as well as foot-and-mouth disease. Well now, this solution, what effect does it have on the hides themselves for use afterwards?—The effect of the formic acid is to soften the hide, to cause it to swell to absorb water much more readily. I sent to Mr. Landon a report of Dr. Ponder's investigations for the Leathersellers Company, in which a curve of swelling is given showing the much greater rapidity with which the hide softens with the aid of the formic acid than it would with water alone. With water alone really to soften a hide thoroughly takes days.

6070. Then, really, as a matter of fact, instead of the hides being deteriorated by this process they are rather improved, I take it?—They would be very much improved from the point of view that the tanner would be able to judge whether they were in good condition or not, and they would, I think, suffer no further deterioration after that treatment. Mr. Seymour-Jones would probably tell you that even without the mercuric treatment, using the formic acid and salt alone, he prepared some sheep skins, sheep skins which had been unwooled and were ready for leather manufacture, with a formic acid solution and salt, and he shipped them upon one of the Liverpool Steamship Company's lines, sent them right up the Amazon to Manaus and back, and they returned in perfectly good condition although they had merely been packed in a loose fashion, and been exposed to every possibility of putrefaction during their transit, so that there is no ques-

tion that the formic acid without the mercury has a great effect in sterilising.

6071. And do you think from your knowledge of the trade that they would have any objection to that kind of disinfection taking place?—I think to begin with that there would be opposition as there always is from a very conservative trade, but most people would find their benefit in it after a time. I think that, if the question of the difficulty of enforcing it, and of the cost of carrying it out, could be got over there would be no permanent opposition from the trade.

6072. I suppose the trade realise themselves that these hides, these wet hides, shipped are a source of infection as regards anthrax as well as possibly of foot-and-mouth disease?—I should rather say, if I may be allowed to correct your opinion a little, that the wet hides are a comparatively slight danger; that it is the dry hides that are dangerous. The mere fact of wetting the hides and salting them diminishes the danger largely, because the infection of the anthrax, and very possibly of the foot-and-mouth disease, is conveyed in the dry dust, clots of blood and the like, attached to the hide which become shaken off and distributed, and I believe there have been scarcely any cases known of infection conveyed by wet salted hides.

6073. Is not the salt put into the hides for the purpose of preserving them, not for disinfection?—That is so, and it is not a disinfectant to any very great extent. But, if you have the hides in a wet condition there is no dust, and when they come into the tanners' hands they are treated with lime and in other ways which, while they are not an efficient disinfectant, must still destroy many bacteria. I should think it probably would destroy anthrax bacteria, but not spores, so that the danger of infection after that is very much reduced.

6074. Really, I may take it from you that, if the disinfection was not too costly the trade, although they might at first object, in the long run would find it of benefit?—I think so.

6075. I see that Mr. Seymour-Jones said in his evidence it would be about 1.6d. per hide, a trifle over 1½d. ?—If that is really borne out by experience and in practice it is a cost which I think is quite negligible.

6076. (Sir Bowen Bowen-Jones.) Would a cost of 3d. on a strong bullock hide be a negligible quantity also?—The hides are worth from 1l. to 2l. according to weight; I should think all more than 1l. At present the prices are very high, so, of course, it is only a small percentage, and I think the hides would arrive in better condition. It would be still better naturally if the antiseptic process could be applied to the hides while they were fresh and without previous drying. It would be a saving in cost, because the drying would be unnecessary and the hide would arrive in better condition; but naturally, in countries where the hides are produced far from the sea, that cannot very well be done.

6077. We have to deal with things as they are, and apparently from eastern countries most of the hides are dry. Do you recommend a solution of formic acid being applied to the hide first and then the bi-chloride of mercury afterwards, or would you mix the two together to disinfect the hide?—I think it answers equally well to combine the two, and it certainly saves labour.

6078. It certainly saves labour and saves expense?—It is probably better, because, as the formic acid compels the hide to absorb water it compels it to absorb the mercuric chloride at the same time, so that you get a better penetration.

6079. And if the solution is a mixed one, would the formic acid soften the hide and act on the albuminous materials in the hide in the same way?—Yes, the mercury does not interfere with that action. The mercury is, of course, extremely small in quantity. Dr. Ponder proposes as a practical method only 1 in 5,000.

6080. Would the mixture soften the hide and prevent that precipitation of the albuminoids that you speak of if mercury is put on the hide alone?—Yes, I do not think there would be any precipitation of the mercury by the hide after it had been treated by the formic acid.

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6081. Even if mixed with mercury?—There certainly is no doubt that if it is mixed with mercury, it does check the precipitation very largely. I should not like to commit myself that it checked it absolutely and entirely for I do not know.

6082. It would check it sufficiently to prevent that hardening of the hide which you say deteriorates the hide if it is treated with bi-chloride of mercury alone?—I think I have made myself not sufficiently clear. It is not the hardening of the hide by the mercuric chloride which deteriorates it, but the taking up of the mercuric chloride in useless forms which prevents its disinfecting the hide.

6083. Prevents the germs of anthrax being attacked by other disinfectants?—For instance, if you were to mix up an egg, we will say, with water, and you were to put to it a comparatively small quantity of mercuric chloride, it would not prevent that egg putrefying, although the amount of mercuric chloride used may be amply sufficient to do so under other conditions, because the mercuric chloride would precipitate the white of egg as a clot, and would go down with it and would be taken out of the solution.

6084. Well, but to stick to the concrete question: the hide. If bi-chloride of mercury is applied to a hide you say it combines with the albuminous substances in the hide and forms hard impervious material?—No, I do not think I said that it formed hard impervious material.

6085. You may not have used the word "impervious," but you said "forms hard matter?"—No, I think not.

6086. That caused the germ of anthrax to be resisted, was not that so?—Oh no, I think you have a little misunderstood me somehow. What I said was that the anthrax spore itself was included in hard clotted blood which resisted the action of disinfectants; that the formic acid had the effect of softening these. What I said about the mercury was that there were certain things in the hide which absorbed and threw down the mercury in a useless way, so that it no longer acted as a disinfectant.

6087. That it did not act as a disinfectant?—Yes.

6088. Because it formed another combination with other bases, is that it?—Exactly.

6089. So that it became useless; that it did not deteriorate the hide, but it became useless in its effect as a disinfectant?—Precisely; yes. A strong enough solution of mercuric bi-chloride would sterilise any hide, but then it is expensive and not practical.

6090. But I take it from your answer now that it would not deteriorate the hide itself?—No, not in any reasonable strength.

6091. Not by forming these two combinations?—Oh, no, it has no effect; the quantity is extremely small you see; in no case would you use mercuric chloride much stronger than 1 per 1,000.

6092. I am not sufficiently expert to know about the proportions, but it would not damage the hide?—Oh, no; it does not damage the hide.

6093. I think we understood from Mr. Seymour-Jones that it did make the hide harder than if it had not been used; that it would make the hide harder?—I do not know what he said about it. I should not have thought that that was so.

6094. You do not attach much importance to that?—No.

6095. Would you apply this mixed solution to thin dried hides as well as to thick dried hides?—Oh, yes. I do not think there is any reason for excluding the one or the other. These hides would be treated more quickly and more readily.

6096. Would a sheepskin require as much as an ox-skin?—Oh, it would require a much smaller quantity.

6097. Would the same strength be required for the same amount of skin?—Yes, I think so; because, you see, it is not a question really of the action of the skin as regards the mercury, but the action on the possible bacteria which are there, and if the solution is too weak it may fail to kill them.

6098. And the same strength solution would do for the thick hide and the thin hide?—Yes.

6099. And would not damage either the thin hide or

the thick hide in your experience?—So far as our experience goes, it does no harm whatever.

6100. Could you apply the same solution to a split hide?—To any raw hide material, or really to leather if there was any object in it. I do not think that it would be so necessary for leather, but it can be applied to any hide material without doing harm.

6101. We understand that some hides are split for the purpose of manufacture. Would you apply it to a split hide after the splitting has taken place?—Certainly, if the hide was split in a raw condition; and that is applicable to sheep-skins. It would be perfectly suitable. It is a very excellent method of preservation for the sheep split or for the other side, for either the grain side, as it is called, or the flesh side of the skin. Either of them can be preserved by that method in the most satisfactory way.

6102. But, in importing dry hides, it is recommended that this disinfection should take place at the port of embarkation?—Yes.

6103. What would the practice be with regard to split hides there; would there be any split hides?—At these difficult ports of embarkation, Eastern ports, there would be no split hides or split skins, as the manufacturer would call them, sheepskins, generally, but from Australian ports and New Zealand ports you might get those in large quantity; but, there, I do not think there would be any difficulty in the curing of them being done at the place where they were split, which is always preferred. They are often dried, but I think it would be very easy to get the actual cure to take place without any drying.

6104. And the treatment with this bi-chloride of mercury and formic acid on a split skin would not injure that?—Followed with salt it does not injure it. The salt is rather an essential; the salt has a very curious effect; the salting subsequently.

6105. Followed by salt?—Followed by salt is rather important. The acid tends to swell the hide or skin; the action of salt is to reduce its thickness again very rapidly to make it part with water; it becomes thin and soft, practically converted into leather. If you take a skin which has been prepared in that way and dry it, it is completely leather. A fur skin, for instance, which had been treated in that way and then dried, would be perfectly suitable for making up into a fur garment without further treatment.

6106. It is a good thing to apply salt on dried hides after treating them with this process?—It is a necessary part of the process, I think.

6107. Before they go to the tanyard?—Yes.

6108. Now, with respect to wet hides: would you recommend the same treatment as with dry hides?—The same treatment is a very good one for wet hides, but it is not so necessary. Wet hides do not produce dust, and there is not the same danger of infecting the hold of a ship with the dust from them that there is with dry hides. It certainly would be a good thing to do and a good means of preserving them; but I do not think it is of the same importance from your point of view, from the point of view of this Committee.

6109. Would the ordinary salt with which hides are packed be sufficient to kill the spores of anthrax and foot-and-mouth disease?—Oh, no; it does not do so. It does not kill them. If they were treated with formic acid and mercury and then salted as at present, they would be, I believe, entirely free from any danger of infection from anthrax.

6110. Then in order to minimise the risk of the infection, you would recommend the application of the same solution to wet raw hides as to dry hides?—I should do so.

6111. Could you apply the same treatment to sheepskins with the wool on them?—Well, it could be done, and it would sterilise the wool completely. Some experiments have been made upon the action of formic acid upon wool by an expert of Bradford, and he showed that even using formic acid of ten times the strength, or perhaps more than ten times the strength of that recommended by Mr. Seymour-Jones, it had no prejudicial effect upon the wool whatever.

6112. Would the bi-chloride of mercury damage

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the wool?—No; not in the small quantities in which it is suggested to use it.

6113. Do you think it would be a practical thing to dip sheepskins for a period of 24 hours? I think Mr. Seymour-Jones told us, in the same way as to dip dry hides at the ports on the other side?—It certainly would, but, of course, as a rule, or at least, very frequently, the skins are unwooled before they are sent; the skins are sent apart from the wool. A good many sheepskins, however, come from the Argentine with wool on them. Many of them come to France. There is a great centre for the treating of that sort of thing at Mazamet in the Tarn Department, and there they strip the wool off and recure the skins. I suppose some come to England. They certainly go all over France; they are called "cuirots."

6114. And you consider that this application would not be injurious either to sheepskins with the wool off, or woolled sheepskins; is that the proper term for them?—Yes, quite so; no, I think not; that is my opinion.

6115. Supposing woolled sheepskins were treated in this way, and the wool was sent in the ordinary form separate, do you not think there would be a risk of infection both of anthrax and foot-and-mouth disease from the wool?—Undoubtedly the wool is very dangerous as regards anthrax, more dangerous than the hides probably are. The cases of anthrax occurring in the textile trades are far more numerous than those in the leather trades, but of course the difficulty of disinfection is considerable, because you cannot open the bales out in order to treat them in this way, and there is no very obvious way in which you could get such solutions to penetrate the bales. It might be done, I think, but the difficulties of applying it to wool are mechanical. It would not injure the wool, but there are considerable difficulties in saying how it is to be applied. It is perfectly easy, absolutely to disinfect loose wool.

6116. Could you make any suggestion? Could you give any suggestions to this Committee as to a means of disinfecting the wool at the port of embarkation?—I am afraid hardly. I think it is a little beyond my province. I can only give general scientific suggestions about it, and naturally these technical things require more knowledge of particular methods than I possess with regard to wool. Of course, there are objections to wetting and washing wool. Under those conditions, you want the wool to come with the natural soap upon it, if one may say so, the suint, and if you once wash it you destroy that and alter the condition of the wool considerably, although it does not injure it as a fibre.

6117. Would you not alter the condition of the wool on sheepskins if you dipped sheepskins?—Oh, unquestionably you would; but that is not so serious because as a rule it is only the inferior sorts of wool which come in that sort of condition. Wool off skins always brings a lower price than the fleece wool which has been shorn.

6118. It was suggested to us the other day that the germs of anthrax were more likely to come in blood that was upon the wool than in the wool itself. Do you think it would be practical to have a legal classification of sheepskins with blood on them and those free from blood, and wool with blood on it and wool free from blood, on the other side?—There is no doubt that the blood upon the wool is the greatest danger, but how far it would be possible to have any legal classification, or to separate the wool with blood from the wool which has no blood, I am not in a position to give a statement. I am not a textile man, but I may mention that there was a case of anthrax tried in Leeds the other day which rather turned upon that point. It is, I believe, the practice in woollen mills in sorting the wool to throw out parts of fleece which have blood upon them, and in this case it was shown that great carelessness had occurred in that respect, that the blood had been allowed to go with the cleaner wool without any great responsibility.

6119. (*Sir Charles Rose, M.P.*) I take it for granted that this treatment would be perfectly effective in destroying the germs of anthrax and foot-and-mouth disease, but the point is whether it could be carried out practically without any serious injury to

the leather trade. You said, I think, you thought at first there would be opposition, but afterwards when they understood it they would fall in with it; something to that effect?—Yes.

6120. Then, after that I think you said that it did deteriorate it, but to no great extent?—No, I do not think it deteriorates it.

6121. Then I misunderstood you?—I am afraid I have not made myself quite clear.

6122. To no great extent you said?—No, I think it does not deteriorate it at all.

6123. It is not a process that would be adopted by tanners, it does not improve the hide?—For certain purposes it improves it, and it is certainly a better method of cure in places such as the Argentine, at the Liebeg's factory, for instance, where it might be possible to get the method adopted as their ordinary mode of cure; they would get hides in better condition probably than by any other means.

6124. So the process might be adopted out in the countries that the hides originate from and improve them?—Yes, I think it an excellent process for cure; it retains the hide more in its natural unaltered condition than any other process I know. At the same time, of course, it is only fair to state that while it has been very carefully tested experimentally, it has not been carried out on a very large scale.

6125. I was going to ask you that?—And that it should be taken up quite tentatively if anything of the sort was contemplated.

6126. Then it has never been tried on a commercial scale?—Not on a large scale.

6127. To any extent at all; it was merely experimental?—Well, it has been done to the extent of a certain number of hides and skins, and I think it has been proved quite conclusively that the leather was not deteriorated by the treatment, but from the commercial side it has never been done upon thousands of hides.

6128. So we really do not know that it might injuriously affect them unless it were tried on a very large scale?—I think that is a fair assumption. I do not believe myself that it is injurious, but it is impossible to tell the effects of a change of that sort.

6129. All you can say is that it will destroy the germs of anthrax and foot-and-mouth disease; the rest you are not so sure about?—It will destroy the germs of anthrax and foot-and-mouth disease. There is no question of that, I think.

6130. But you are not quite sure that you may not be going to destroy something else?—Well, I think practically you are, but you cannot introduce any wide sweeping change into any industry and foresee at the moment all the effects it may produce.

6131. You rather, I think, suggested that this treatment should be done at the port of embarkation? Mr. Seymour Jones states in his Report at a very low cost; that, of course, would depend entirely upon the quantities that were sent away from the various ports of embarkation?—Yes.

6132. You could not get it down to a minimum cost except in the case of a very large shipment?—Yes.

6133. Take Manaoas; there undoubtedly only a limited amount comes from there?—I suppose so; I do not know what the quantities are.

6134. The cost would be materially increased from what it would be in another large port, say in New South Wales?—Oh, that is certain.

6135. Would it not be better to have them treated at the port of arrival here, where there would be much fewer, and it could be done much more scientifically and effectively?—As far as the leather dried is concerned, I think it probably would be better, but it does not seem to me that it would get over the difficulty which this Committee is specially interested in, of preventing the infection of ships and of other cargo. There is one suggestion, if I might be allowed to make it, in reference to what you have just been asking me, I think that this process could be applied very easily, and would probably be really very advantageous in the case of sheepskins, that while it is perfectly suitable, in my opinion, for hides, it is particularly advantageous for sheepskins, and that most likely the

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Australian and New Zealand shippers might be induced to try it upon a comparatively large scale without any absolute legal pressure.

6136. Do you not think it would injuriously affect the trade? For instance, as you know at the present time the American market is a very great competitor and takes a great many skins and hides, if that were done at the port of embarkation, would it not rather tend to the shipment being made direct to those countries instead of coming here for transshipment?—I think it would.

6137. (*Sir Harry Verney, M.P.*) Just one question arising out of something Sir Bowen Bowen-Jones asked you in regard to split hides. I thought that was done mostly in this country; is not that so?—I think there are one or two firms, at any rate in New Zealand and Australia, who are doing it on a rather large scale now, but you would get perfectly definite information upon all these points from Mr. J. T. Wood if you had him here. He is a man who probably knows better about the sheepskin trade than any other man you could have.

6138. It is probably rather an ignorant question, but when you have got a split hide, the question of disinfection, if it has been done abroad, then becomes a thin hide; it is the same problem, is it not?—Yes.

6139. There is nothing particular about a split hide that does not apply to any other hide?—Oh, not at all, the skin is not split until the wool has been removed, and it is in a condition practically ready for tanning or nearly ready. For split sheepskins I believe myself that this process we are talking about is the most advantageous way of curing them there is; that it is commercially a profitable thing to do apart from the question of disinfection.

6140. Yes, but I rather gather there was an idea that there were three different kinds of hides, thick, thin, and split. There is nothing different in a thin hide from a split hide?—Not from this point of view, but a thin hide would be understood to be a skin with the hair off, while the split hide is an artificial product.

6141. From the point of view of disinfection there is nothing in it?—There is nothing in it except that in the case of the split hide you have not the difficulties of the wool or of the clots of blood.

6142. (*Mr. Lane-Fox, M.P.*) You said that there was much less danger in the case of wet hides than in the case of dry hides, because of the absence of dust?—Yes.

6143. That would be largely in the case of anthrax, but in the case of foot-and-mouth disease, would there not be a possibility of the moisture enabling the bacillus to live longer?—Oh, that I think is quite possible. I really do not know anything about the bacteriology of foot-and-mouth disease. I am afraid my opinion is worth nothing about that; it is quite possible speaking on general bacteriological grounds.

6144. That the wet hide might be the greater source of danger of the two?—Quite possibly.

6145. (*Major Dunne.*) Do I understand you to say that there is no firm in England which had adopted, what I might call the Seymour-Jones Process of softening dry hides?—You see there is no firm in England which sells these hides. I think it is quite probable that firms may be adopting that process, or modifications of it for softening dry hides.

6146. We rather understood from Mr. Seymour-Jones—he did not actually give us the names of the firms—that there were two or three firms in England that were adopting this process. I think not so much from a point of view of disinfection, as from a point of view of softening the dry hides?—Oh, I think that is extremely probable. It would probably be a very wise thing to do in that case, naturally if they do not consider the disinfection, the formic acid and salt are the important elements; the mercury is merely a question of disinfection; it does not assist the softening of the hide in any way, though it does not injure it, but the softening with formic acid, and then the subsequent treatment with salt, is a process which, I think, is very likely in use now, and very likely indeed to become more widely in use.

6147. But, in your own experience, you have not come across any firms who use this process? You only think

it would be advisable of them to use it?—I have not come across any firms who use this process. In the Leeds district a good many dry hides, Indian kips, are softened, but they are very much fewer than they used to be. I think they are mostly softened now with very weak solutions of caustic soda, or sulphide of sodium. The formic acid is much more effective than that, and less injurious, and, I think, is not unlikely to be used, but, as I have said, I am not aware that it is being used. We have used it, of course, experimentally.

6148. (*Mr. Bathurst, M.P.*) You said, I think, that by means of this process the tanner can judge whether the hide is in good condition or not?—He has a much better opportunity for judging, at any rate.

6149. Why?—A dried hide looks perfectly sound in most cases, the outside of the hide, in fact, dries rapidly while the damage is in the interior. It is the centre part of the hide which dries slowly which becomes damaged, and so long as the hide is dry and smooth and flat it looks perfectly sound and satisfactory, while in further treatment, if the interior is damaged, it may absolutely go to pieces. I can recall, for instance, one lot of about 700 dried hides which I worked myself in the tannery in which I was then a partner, and I should think fully 25 per cent. of them were quite useless for any good sort of leather, although to all appearance they were perfectly sound hides before taking them into use.

6150. The very softening of the hides would disclose any defects in the hides?—It certainly makes them very much more visible. I do not say it would absolutely disclose any, but it is very much easier to judge of a wet salted hide than it is of a dry hide.

6151. Would it disclose warble holes?—A warble hole could be seen on the dry hide if it were not plastered. Some of the Indian hides are plastered with a sort of salt-mud, and in that case everything is covered up.

6152. I understood from Mr. Seymour-Jones that some tanners abroad, I think in America, are themselves using this process?—That may be.

6153. What would be their object in using it after they had purchased possibly defective hides?—It probably is a very excellent means of softening a defective hide. What happens in the case of a defective hide is something of this sort. You take the hide off the animal's back, you hang it up in some place where it will dry rapidly, and very often in the sun, and that in tropical climates. So long as it is moist, of course, it gets cooled owing to evaporation; but as it dries on the outside, it becomes impervious almost to moisture, the interior dries slowly while the outside becomes extremely hard; it may rise to almost any temperature, higher than your hand will bear. Even a stone will become so hot you cannot touch it, and the result is probably that the interior of the hide may be liquefied, converted into glue; or, on the other hand, if the drying is slower the outside may be dried and preserve the hide from putrefaction, while the putrefactive germs continue their work in the moist part of the hide.

6154. Has there been any discussion of this subject by tanners at a conference or otherwise?—I believe it has been a good deal discussed by the Tanners' Federation; it has been discussed by the Association of Leather Trades Chemists, and a great deal of attention has been paid to it by the Worshipful Company of Leather Sellers in London, who have had a special investigation made of it. You have the Report before you.

6155. Has there been any strong opinion expressed by any of these bodies against it?—I believe none; I am not aware of any. Suggestions have been made with regard to the difficulty of it, but I do not think that there has been any attempt made to say that it was injurious or that it was an undesirable thing in itself.

6156. Just to clear up a matter that Sir Bowen Bowen-Jones asked you about. Do I understand that the object in using the formic acid is to prevent the mercuric chloride, as the disinfectant, asserting itself with albuminous matter, resulting in local precipitation instead of spreading evenly over the whole of the

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structure of the hide?—That is practically so, but if it fixes itself upon the hide it is no longer there to affix itself upon the bacteria.

6157. Quite so, but the softening process, as I understand, is to enable the mercuric chloride to permeate through the whole of the structure of the hide and so kill the germs and the spores?—Well, the most important part, or one important part which I think has not been mentioned, seems to be the swelling action on the spores and the bacteria themselves. The formic acid alone followed by a salt treatment will, to a very large extent, kill even anthrax spores, apart from mercury.

6158. Do you mean that the swelling of the anthrax spores would make their resistance less persistent?—Oh, very much less. It is the dry thing, the hardness, the mechanical resistance, if you may put it, of such very small bodies as the anthrax spores which I suppose has the most to do with the difficulty of killing them.

6159. The question has been raised as to the costliness of this process; but although mercuric chloride is expensive, used in such very small quantities the process could not be regarded as costly, could it?—No, I believe not. I have not gone in detail into the question of cost.

6160. Then, there is another question. We all know that the mercuric chloride or corrosive sublimate is a most extremely poisonous substance?—Yes.

6161. Might there not be some danger in the handling of mercuric chloride in places where it would be used?—Oh no, not in the very least, in the sort of concentration in which it would be used. Of course there is always a danger in such things in a concentrated form, just as there is in arsenic compounds, for instance, or in arsenic itself. It may be misused in the solid form, but I think that could be guarded against. It is a powerful corrosive. But the sort of solutions that are used are the solutions that Mr. Seymour-Jones showed that he was not afraid to drink, and it certainly is quite a suitable solution, apart from the formic acid, to apply.

6162. But I take it these solutions would have to be made up by experienced persons, in order to be quite certain that no evil results would occur?—Oh, I do not think so. I think the difficulty could be got over, that most people with intelligence are accustomed to using more or less dangerous things. Probably the corrosive sublimate is not so dangerous in the way of small accidents as sulphuric acid.

6163. There is another question which I meant to ask you; I am not sure whether you have not answered it. It was this: Supposing that there was any objection to corrosive sublimate, would it be possible in softening the hide with either formic acid or some other organic acid to use any other antiseptic or germicide of a chemical nature?—Oh, I think so. I think corrosive sublimate is, so far as my knowledge goes, the most effective germicide with which we are acquainted, at least the most effective practical one. There are certain things, like mercuric iodide, which are said to be more efficient than even corrosive sublimate, but there are many things which are not poisonous, and which will kill most bacteria absolutely. It is merely the excessive power of resistance of the anthrax spore which has rendered corrosive sublimate almost the only thing.

6164. That is what I thought you were going to say; the great advantage, as I understand, in mercuric chloride is that it will penetrate to the heart, if I may so call it, of the anthrax spore more easily than any other known chemical?—I really think it is the formic acid which does the penetrating, and the treatment with formic acid and another antiseptic might very conceivably be quite as effectual as treatment with mercuric chloride; but we know that mercuric chloride will do it, and we do not know to the same extent about some of the other things which we might try.

6165. There is a prejudice, you will admit, in the public mind about corrosive sublimate?—No.

6166. Well, I find it as a photographer?—I think it is a prejudice which will very easily be got over. There is a prejudice against arsenic in weed-killers and fly-

papers and all sorts of things, and the public does not object.

6167. Just to complete this subject, can you, as an expert, mention any alternative substance which might be efficaciously used instead of mercuric chloride if it were deemed unsuitable?—Oil of mustard has been suggested as a very effectual one. Then it is quite possible that alpha-naphthol might prove effective, though I do not think it would be suitable for use with an acid solution; but there are many antiseptics. One of the difficulties, if I may be allowed to be a little technical, is this: with regard to the coal-tar antiseptics, almost all these coal-tar antiseptics are only efficient in the neutral or acid solution, but a great many of them are only soluble in the alkaline one.

6168. That rather stands in the way of their practical use, does it not?—It is awkward; I think it is quite possible these difficulties might be got over, and if corrosive sublimate were the objection, it would be worth studying the question further.

6169. Then, with regard to wool, because if we are talking of anthrax at all we must necessarily consider something which would be equally effective with wool—you have referred to the fat of wool, the suint, I think you call it?—The suint, yes.

6170. What would be the effect, in your opinion, as an expert of this formic mercuric process, upon the suint in the wool?—If you were going to soak the wool, you would, I suppose, remove, at any rate, a certain quantity of potash salts.

6171. That is the soaking that would do that, and not the application of the disinfectant?—No.

6172. As a matter of fact, is there any commercial use now made of the potash in suint?—Oh, yes; not so much, I think, in England. Messrs. Holden had a plant, and they had a very large plant at Roubaix. I believe there they are recovering it. In the Bradford district, I think, the recovery plant with regard to the potash has not been much worked.

6173. Would there be any other objection to this process as applied to wool, except the removal of the potash in the suint?—It would only be a question of the things that it removed. There are certain difficulties that occur to me. You must remember I speak to you, not as a man who has any particular knowledge of wool; but there are certain difficulties, which would be these: If you wet your wool you must dry it again. Such a process might possibly be applied, easily applied, when the wool was being washed, but then the wool has to be sorted. There are certain technical difficulties about it. If you could take the bales of wool as they arrive and which, so long as they are baled up, are probably not dangerous, and treat those bales in some way with a solution that would absolutely penetrate them before they were sorted, you would most likely get over the difficulty. But a wool-bale tightly pressed in an hydraulic press is not easily penetrated with a liquid. You will probably have to use a vacuum or a pressure process or some mechanical device of the sort in order to get any liquid forced through the wool.

6174. Do you happen to know whether this process has been discussed by the textile trades at all?—It has been discussed, but I do not know that it has been practically tested. I know that the thing has been discussed by Dr. Eurich, for instance, who is the Bradford manufacturers' adviser on such matters.

6175. And does he favour its use?—That I cannot be sure of, but I think he admits that nothing else which he has tried has proved effectual.

6176. I want to ask about naphthalene. It has been suggested to us, not by an expert, that because naphthalene is used in lumps between hides when they are put on board ship possibly that would be effective in killing the germs, at any rate, of foot-and-mouth disease. What would be your opinion about that?—I cannot tell; it is a question for experiment; it does not usually kill most germs, but it has some antiseptic power.

6177. It has some antiseptic power?—Oh, yes, no doubt. I think it is principally used, however, to keep off insects.

6178. Probably used to prevent the hair being taken from the surface by moth?—There is a little beetle

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which eats in under the surface of the skin and does a great deal of harm.

6179. One final question with regard to the disinfection of holds. I am not quite sure whether this is in your line, but have you any idea as to the most effective way of disinfecting the hold of a ship as against the germs either of anthrax or foot-and-mouth disease?—I suppose almost the only thing that could be done is to fumigate, and so you are pretty much bound down to formaline or to sulphurous acid fumigation. They are neither of them very effective, but I do not know that you can do anything better. You cannot actually wash everything. If you could wash everything with this mercuric chloride solution it would be effective, probably rather a stronger solution. That is effective wherever it can go.

6180. Too dangerous?—No, the quantity is so small that it is not at all dangerous.

6181. Formaldehyde is considered to be too expensive for such a handling?—Well, I do not know. Formaldehyde is cheap and can be made probably cheaper. It is a thing which is not likely to appreciate in price where many other things—where the natural products which are difficult to get—may do so.

6182. (*Mr. Richardson Carr.*) Practically speaking, from the leather trade point of view, if this process could be carried out at the port of embarkation, and the prejudice could be removed, the leather industry in this country, the tanners, would really profit by it, because they would get the hides already softened, and they now have to soften them in their own tanneries; is not that so?—That is no doubt so.

6183. If the prejudices could be overcome and the process considered satisfactory, it would be really an advantage to them, assuming the process is right?—That is my opinion.

6184. (*Mr. Morrison.*) Supposing this process were carried out in some foreign country, would it be necessary to use salt at the port of embarkation after the process has been carried out?—I think salt is an essential part of the process.

6185. Salt would be required?—Salt would be required.

6186. In every case?—In every case, I think.

6187. Do you know that the salt might be a difficulty in countries where at present it is not used and where the hides are only dried?—I do not think it would at the port; it is certainly a difficulty up country. If you take some ports in South America where the hides are produced far inland, where, as yet, there are probably no railways and the salt would have to be carried by horse or mule traffic, as well as the hides brought down in a wet and consequently heavier condition, obviously there are difficulties there. The people have been accustomed in India and many other countries to avoid the use of salt on account of taxation. De-naturalised salt is used all over the continent of Europe where there are Salt Taxes, and that sometimes leads to great inconvenience in the trade.

6188. But the suggestion is, I imagine, that this process would be carried out practically at the ship's side?—I should think on the quay or near it.

6189. Where the salt difficulty would not arise?—That is so.

6190. But salt is an essential part; you think it would not do to send them over without being salted?—No, I do not think so.

6191. You have a practical knowledge of tanning, I understand?—Certainly.

6192. If you were asked whether you would agree to have this process made compulsory, would you readily consent?—I should say I should like to try a few hundred hides.

6193. Before you did anything?—But I am a cautious person.

6194. Have you conversed with any tanner on the matter?—Oh, yes. I would try a few hundred hides, and risk a few hundred hides quite readily, but I should not like to go further than that until I had seen the thing on the larger scale, because until a thing has been really tried on a large scale you do not know. Of course, I hold no brief for the formic mercury process or any other.

6195. What do you find the tanners say about it? You have conversed with them, you say?—Well, I think the prevalent feeling, so far as I can judge, is that they are waiting until something is done, and so long as the Government will allow them to import hides as they are they are quite content.

6196. But you have not heard any of them express a serious objection?—I have heard people express the opinion that it would be costly, or that it would be difficult, or that you could not carry out such regulations. All these things are rather obvious; but I have never heard the opinion expressed that it would be injurious to the hides if it could be done. But, of course, you must remember that many of these men do not know; that they have even much less opportunity than I have had for forming a definite opinion.

6197. Do you think that there would be serious opposition to such a proposal, supposing it were made law?—I think on the part of the shippers probably.

6198. You mean the ship owners?—No, I mean the shippers from the distant ports. They would object to having to go through an expensive process—well, a process which does entail expense—unless they saw that they were going to get some benefit by it; and to begin with, of course, that would be difficult, because until it had been thoroughly tried, tanners would not see that they were getting a benefit for the extra cost.

6199. Would the value of the hide not be increased by the process—commercially, I mean; would the commercial value of the hide not be increased by the process owing to the increased weight and better condition?—I think it would be increased, but, of course, difficulties would arise from the fact of that increased weight. You take a dried hide, and the tanner has a considerable knowledge now from experience how much leather he will get out from a certain weight of dried hide. If you wet that hide and then salt it and bring it to him in another form, the knowledge will not at first be exact. He may say: "Well, this will do just the same as the ordinary wet salted hide," but he does not know it for a fact and, being cautious, he will probably prefer to keep on the low side in his prices.

6200. Would you expect that, ultimately, the shipper would be able to sell those hides at a higher price than he can sell them for at present?—Certainly, taking into account hide for hide, not pound for pound. Of course, the hides would be much heavier when he got them; he would make a gain in that way, but hide for hide I have no doubt they would be worth more money.

6201. So that in the end, when the shipper found he was able to get more for those hides, he would have no objection?—I think that would be so.

6202. So that you would really expect that after the system had been in operation for a certain time there would be no objection on the part of anybody in the trade; you would expect that?—I should expect that to be so, but certainly I should not like to urge the Committee or to advise anybody to hasty treatment on a large scale. If it could possibly be done it might perhaps be introduced as a special precautionary measure where there was known to be anthrax or foot-and-mouth disease present, and in that way the trade would become used to it without regarding it as an impost upon them.

6203. Do you suggest that it might be tried first in the case of a country where disease was very prevalent?—Yes. Supposing that you were discussing the question of whether you would prohibit the importation of hides from such and such a place altogether, or whether you would allow them to come in with this special form of disinfection, or some other effective form of disinfection, the tanner would no doubt view it as a concession on the part of the Government to allow them to come in at all, and there would be no difficulty.

6204. I understand you to say that you have no knowledge, as yet, of any such experiment?—Oh, I have knowledge of experiments, but not of anything on a really large scale.

6205. I mean on a commercial scale?—We have made experiments ourselves to the extent of doing a hide or two. We treated, for instance, a dried South American hide in this sort of way, only with much stronger formic acid solutions than Mr. Seymour-Jones

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suggests, and we then sent it to a large tanning company. We limed it and prepared it for tanning and then sent it to a large tanning company, without any information as to how it had been treated, and they said that the results were perfectly satisfactory.

6206. Yes, I understand that, but you are not aware of any experiment on a commercial scale having been carried out?—I do not know, but I think it is highly probable that there may have been some experiment on a commercial scale with the formic acid and salt, carried

out upon special skins or sheeps' splits or sheep pelts. I think that is likely; if there have been such, Mr. J. Turney Wood will know.

6207. In this case you think the mercuric chloride has been omitted, because it is of no use in that process as far as the tanner is concerned?—I think that is likely, so far as the tanner is concerned, but I think one may safely say it would do no harm in the quantities proposed.

(Chairman). Thank you, many thanks.

The Witness withdrew.

Tuesday, 26th March 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (Chairman), presiding.

Sir CHARLES D. ROSE, Bart., M.P.
Sir HARRY VERNEY, Bart., M.P.
Sir J. BOWEN BOWEN-JONES, Bart.
Mr. CHARLES BATHURST, M.P.

Mr. GEORGE R. LANE-FOX, M.P.
Mr. RICHARDSON CARR.
Mr. E. E. MORRISON.
Mr. E. M. NUNNELEY.
Mr. W. H. F. LONDON (Secretary).

Professor Dr. D. A. DE JONG, Extraordinary Professor of Comparative Pathology at the University of Leyden, and Professor of Infectious and Parasitic Diseases at the State Veterinary School at Utrecht, called in and examined.

6208. (Chairman.) We are very grateful to you for having come over to help us with our evidence on this Committee. I hope it has not been a great inconvenience to you. The Reference of this Committee is to inquire into the circumstances of the recent outbreaks of foot-and-mouth disease and to consider whether any further measures can be adopted to prevent their recurrence?—I understand.

6209. Now, would you inform the Committee regarding the Official Veterinary Organisation which exists in Holland for dealing with outbreaks of contagious diseases of animals?—Yes; there exists a law which I have here, a law of the 20th of June 1870, State Journal No. 131, and that regards all the diseases that are called afterwards in a Royal Decree. In any new disease there comes a new Decree. Under the existing law then at present the measures taken specially with regard to foot-and-mouth disease are to be found in the Royal Decree of the 25th July 1911 (State Journal No. 260). When anyone wishes to know the measures taken generally then he has to read the law. For the measures specially taken against foot-and-mouth disease is to be read the Royal Decree that I have just cited.

6210. Have you a central organisation in Holland?—The Infectious Diseases Law is executed by the Minister of Agriculture. Under the Minister of Agriculture all agricultural affairs are directed by the General-Director of Agriculture. At the General-Directory of Agriculture there are several inspectors. Every inspector has a certain area for himself. There is one inspector that is called the Inspector of the Veterinary Service, and he has now under him more specially the measures of veterinary health.

6211. These inspectors, I understand, are under the authority of your central organisation in Holland?—Yes.

6212. All the inspectors?—All the inspectors are under the Director-General of Agriculture.

6213. Then to what extent does the central organisation take part in the actual suppression or control of an outbreak of disease?—Then I have to say, Mr. Chairman, that the law of infectious diseases at the moment does not mention the General-Director of Agriculture and the Inspector of the Veterinary Service. According to this you cannot find the general inspection in the law. In the law you will find only the Minister of Agriculture, and under the Minister are directly the District Veterinary Surgeons. The General-Director of Agriculture and the Inspector

of the Veterinary Service are nominated afterwards, and the law has remained the same since 1870. But a central organisation exists to combat all infectious diseases, and the law concerned is executed by the Minister and under His Excellency by the District Veterinary Surgeons. And recently the General-Director of Agriculture and the Inspector of the Veterinary Service have been placed in an administrative way between His Excellency the Minister and the District Veterinary Surgeons and have taken a good deal of the direction. That is not quite following the law, but it has become the actual position; and so veterinary police measures are now directed a good deal by the Inspector of the Veterinary Service, under the authority of the General-Director of Agriculture, under the supreme direction of His Excellency the Minister. I hope you will understand it.

6214. I rather gather that these two gentlemen are acting under the Minister of Agriculture?—Yes.

6215. They are acting under him?—They are.

6216. But all action is taken by the central authority, is it, on their advice?—No; all action against diseases directly is taken, following the law, by the District Veterinary Surgeons; and they have, following the law, to act under His Excellency the Minister; but now, in latter years, there has been appointed a General-Director of Agriculture and an Inspector of the Veterinary Service, and they have taken an important part in the general administration. That is perhaps not following the law, but it is generally known now that between His Excellency the Minister and the nine District Veterinary Surgeons now are standing, under His Excellency, the General-Director of Agriculture, and under the General-Director of Agriculture the Inspector of the Veterinary Service.

6217. Who appoints those inspectors?—There is but one inspector, the others are District Veterinary Surgeons. They are inspectors, but they have not the title of inspector; the name is, District Veterinary Surgeon.

6218. Well, then, who puts him into action?—The District Veterinary Surgeons are appointed by the Queen, on the recommendation of His Excellency the Minister of Agriculture.

6219. But does the Central Authority, that is, the Minister of Agriculture, say what is to be done in cases of outbreak?—No, that he does not, directly; indirectly, well, the Law says it. The interpretation of the Law is by the Minister.

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6220. Do you know our mode of procedure in this country?—I have read something of it.

6221. But do you not know it well?—Not everything.

6222. You cannot say whether the work you do is carried out on the same lines as we carry it out from our Central Authority?—I think, yes, it is the same. I think here measures are taken under the Board of Agriculture by Mr. Stockman, and in Holland the measures are taken under the Minister of Agriculture by the General Director of Agriculture, the Inspector of the Veterinary Service, and the District Veterinary Surgeons.

6223. When an outbreak takes place to whom do they report?—When there is an outbreak of disease, the farmer has to report the outbreak of the disease to the Burgomaster of the Commune. The latter has immediately to call upon the District Veterinary Surgeon.

6224. First of all, the owner of the farm where the disease breaks out reports to the Burgomaster of the Commune?—Of the Commune.

6225. The Burgomaster of the Commune then puts the Veterinary Surgeon of the District into action?—Yes.

6226. Then, after that, what takes place?—The Burgomaster has to follow the prescriptions of the District Veterinary Surgeon, and these prescriptions are based upon the Law, and upon the Royal Decree concerning contagious diseases. But, when it is a very important disease, a dangerous disease—let us take foot-and-mouth disease—then, of course, immediately this District Veterinary Surgeon will make reports to the General Director of Agriculture or to the Minister of Agriculture, or to both, and on receipt of this the Minister, the General Director of Agriculture, the Inspector of the Veterinary Service, and the Veterinary Surgeon of the concerned district act and take other measures, if necessary, to prevent the spread of the disease.

6227. I understand you to say that the Veterinary Surgeon having reported it, the General Director of Agriculture then takes steps himself, if necessary, without the authority of the Central Authority?—He can act for himself, but the supreme direction remains to the Minister of Agriculture.

6228. I think you mentioned His Excellency the Minister of Agriculture, and you also mentioned the General Director of Agriculture; are they the same persons?—No; the Minister is the Minister of the Crown, and at his Department of Agriculture there is a General Board of Agriculture, the head of which is the General Director.

6229. Has the Central Authority any special staff themselves which they can send out when an outbreak takes place?—No, except the persons already mentioned.

6230. None?—No; the Central Authority has only the Inspector of the Veterinary Service and his assistants, and the District Veterinary Surgeons.

6231. They have got no staff, then?—No, but that will come by the way; all the measures will make more persons necessary.

6232. You had an epizootic outbreak, foot-and-mouth disease, in Holland in 1908?—Yes.

6233. Was it completely eradicated then?—Then it was completely eradicated.

6234. Then it comes to this, that the recent epizootic, which still exists, did not depend upon the persistence of the disease in a mild form on some out-of-the-way farms at intervals between the two epizootics. I understand you had an epizootic of foot-and-mouth disease in Holland in 1908. Assuming that to be correct, is it certain that the disease was completely eradicated, and that the more recent epizootic, which still exists, did not depend upon the persistence of the disease in a mild form on some out-of-the-way farms during the interval between the two epizootics?—That is not possible unless one accepts the cause of the infection as persisting in a way that is new, and that is not acknowledged at present by all authorities. I will say this, some accept that it is possible that animals that are very sound, and that have had foot-and-mouth disease, can cultivate in their body the agents, and that after two or three years the agents will cause a new infection. But that is a new

scientific idea that is not acknowledged by all authorities or experts.

6235. Is that your view?—No. I will say this that I am convinced that the two outbreaks have nothing to do with each other. They are quite independent of one another.

6236. Did the first known cases in the present epizootic arise on farms which had been infected during the previous one?—No, that was not the case.

6237. Can you give the Committee any information, founded on observations by yourself, regarding how long the virus of foot-and-mouth disease may retain its activity outside the bodies of animals?—I think that time will be very short.

6238. A very short time?—A very short time out of the body of animals. Then, we have to make a difference between objects that are under the influence of sunlight and of dryness and those that are not, and I think it will be destroyed in the first case within a week.

6239. Within a week?—Within a week.

6240. You would not go any longer than a week?—I think that is long enough. When there are favourable circumstances, let us say, in dung that is not spread out in thick layers, then, I think it will be possible, when it is not in the sunlight, and not dry, that it can remain there for a month and longer.

6241. If it is not exposed to air, and not in sunlight?—If it is not dry, and is not exposed to sunlight.

6242. It might last for a month; would you say any longer?—It will be possible, but it is exceptional, but when it is not in these thin layers, then there comes a high temperature in this dung, and then it is destroyed in a few weeks.

6243. Anyhow, you would not think that it would last six months?—No, I think not.

6244. Not under any circumstances?—No, I think not.

6245. Do you think it would be possible to last a month or six weeks in hay in a loft over where diseased animals had been?—I do not believe in hay; when a country will take measures against foot-and-mouth disease it can prohibit imported hay, but I do not believe that hay is the material that easily brings over foot-and-mouth disease.

6246. You think that hay is not a source, then, I take it, of infection of foot-and-mouth disease?—In general, I think not. When it is transported immediately from an infected farm to another then it may be, but not when it is over-sea, and over a long distance. When it comes from a farm that is safe, and it is infected afterwards, then also I do not believe that it is very dangerous.

6247. Of course, you know that our authorities in this country, owing to the Edinburgh outbreak in 1908, formed the opinion that it was caused by imported hay, and you do not think it was?—I think not.

6248. Well, we will not go into that?—I think not. I do not believe that many authorities believe that.

6249. Have you made any experiments as regards the length of the time the virus remains active?—No, I have not.

6250. It is only your experience?—It is my experience, but I base my opinion also on the experiments that have been made by others on the persistence of the virus in dung. I take the experiments in Germany by Hecker, and others, and that, added to my own experience, I say that I do not believe that this virus persists a long time in animals or abroad.

6251. The Committee rather wish to know what is your experience that the virus cannot last longer than the time you have mentioned?—My experience is this, that when we have had foot-and-mouth disease on a farm, and we have isolated the farm, and the animals there have recovered, and when the restrictions are taken off, and the animals are moved to other farms, there comes no outbreak on those farms.

6252. When an outbreak takes place on a farm do your Regulations impose an embargo on the removal of articles from that infected place?—The law obliges not, unless the District Veterinary Surgeon applies a certain Article of the law, that is Article 29, and then the farm is isolated, and then it is forbidden to take

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out of the farm ruminants and swine and different articles; other articles can be taken out after disinfection; people that leave the farm have to be disinfected; but it is not forbidden, and that is the mistake, to take out horses, to take out poultry, to take out dogs, to take out cats. I believe that all these animals can not only spread the disease as carriers without being sick themselves, but I believe that all these animals can have foot-and-mouth disease. Therefore I hope that in a short time it will be forbidden in Holland to take out of the isolated farms, also horses, poultry, cats, dogs, &c.

6253. When you talk of isolation, what kind of distance or area do you make?—There are several isolations; the first is the farm and the adjacent meadows. This is enclosed by Military or by the Police. Then there is possibly another circle, where the transport of the same animals and nearly the same articles is forbidden; and then it is possible to take a third circle around the two others, wherein transport of cattle may take place when there are sanitary proofs; so we can have three circles. The first begins with the farm, that is surrounded by another circle, and then a third circle can be formed; the whole enclosing several farms and communes.

6254. What is the size from the centre; that is, from the infected farm of the whole area, of the three areas put together?—That can be one province, part of a province, two or three provinces.

6255. What radius would that be about?—I cannot say that. It is very difficult to say that. I can say that afterwards, when I have further information about it.

6256. I understand your inner circle, which is the farm you guard with Police or Military to prevent anything coming in or anything going out?—Yes.

6257. Then you have another circle, and a third circle besides?—The second circle can be two or three hours' distance, to walk round and round that first farm, and the third circle can be much greater.

6258. The small area is about a five-mile radius?—Five to seven miles. That is the second one.

6259. The first one is only the farm?—Yes; when there is one farm infected.

6260. When foot-and-mouth disease exists in neighbouring countries, do you forbid or regulate the importation of any articles of commerce besides animals?—Yes, and of animals also.

6261. Any other?—Animals, and articles concerning animals. All articles that can have been in connection with animals and that are coming from animals can be forbidden.

6262. You prohibit them?—We can do so.

6263. Then, do you prohibit hay?—Hay, not.

6264. Hides?—Hides, horns, hoofs, wool, manure, meat, &c.; but we can refuse others, as straw and other cattle food.

6265. Do I understand you prohibit straw?—No; but we can.

6266. And not hay?—Not hay from the foreign countries. There is very little importation of hay; but we can do it. There is one Article which says we can forbid all that we like.

6267. What animals are forbidden besides ruminants?—Swine.

6268. Not horses?—No. Horses are forbidden out of Great Britain and Ireland and out of Belgium, but not for foot-and-mouth disease; that is principally for glanders.

6269. Assuming that your periodical outbreaks of foot-and-mouth disease which appear in Holland are due to infection from your neighbours, how do you think the disease is brought in?—The disease was brought in last time, I think, out of Germany, and probably it has broken out in the neighbourhood of the frontiers in Groningen.

6270. Then, foot-and-mouth disease cases generally come on your borders?—Very often we can trace back the cases to an outbreak that has not been indicated in the neighbourhood of the frontiers; often we have not had notice of it in due time, and the proprietor has not made a notification, or too late. In other cases the trace is to be followed in the foreign country.

6271. Have you got any law against anyone who does not give notice of a foot-and-mouth disease outbreak?—Yes, we have; but they cannot be imprisoned.

6272. A penal law?—Yes; but no prison; only fines.

6273. Would they be fined heavily or lightly, if they did not report a case of foot-and-mouth disease?—Not heavily. But it will certainly be improved, and the imprisonments will be regulated better when the law is modified, what is projected.

6274. I see from the Netherlands Law that the authority exists for dealing with these diseases by the method of slaughtering. Do you adopt slaughter; do you kill?—In the first cases we always slaughter. We stamp out an initial outbreak on a farm.

6275. You mean if an outbreak takes place in a certain spot you kill at once?—Yes.

6276. All the animals on the farm?—Not the horses.

6277. Of course, all the diseased animals; but do you kill those in contact also?—Also the sound animals; the suspected but sound animals.

6278. What kinds of animals?—Ruminants and swine; cows and sheep and goats and swine.

6279. Does the Government give compensation?—Yes; it gives good compensation.

6280. Good compensation?—Yes.

6281. Have you always adopted slaughtering in connection with the initial outbreaks in your country?—That is possible since the Decree of 1896.

6282. Are you satisfied with the results?—We are satisfied with the results in the beginning, but when we see that there are other outbreaks and that the peasants have not made a Declaration in due time, then we think that it will not be possible to go on in this way, and then it is stopped. At this moment it is stopped.

6283. You mean you stop it when there is a very large number of outbreaks in your country, I suppose?—When there is a very large number of outbreaks in our country, and when we see that by slaughter we cannot catch the agents where it has been spread; when we cannot overtake it.

6284. Do you find that the Dutch farmer is rather liable to conceal the disease when he has got it on his farm?—I think that, in general, the Dutch farmer is not enough co-operating with the Government.

6285. He does not co-operate?—He does not in general, up to this time. The Societies of Agriculture, etc., now begin to see that when the peasants do not co-operate with the Government we have to fear outbreaks every two or three years.

6286. I understand that you slaughter those infected and those immediately in contact, do you not?—Yes.

6287. Do you do anything with those on other premises to which it is possible that the disease might have spread?—Yes.

6288. You do?—When the District Veterinary Surgeon is convinced that the agent of foot-and-mouth disease finds its way to another farm without seeing the diseased animals, then he can advise the slaughter also there, because the animals are suspected.

6289. In other premises besides?—In other premises, yes; he can advise the slaughter of only suspected animals without being diseased.

6290. Can you tell us anything regarding animals, which a considerable time after recovery from foot-and-mouth disease, have spread the infection to other animals?—I cannot say exactly; I have not seen those things, and I do not believe so much that they were perfectly sound. But we have had some cases in which it is said that an animal that had foot-and-mouth disease the summer before, and now imported in another stable that was sound, has caused an outbreak of foot-and-mouth disease, although there was a delay of from eight to nine months; but I do not believe that.

6291. You have heard of cases, but you do not believe it?—I have heard of cases but I do not believe it. I do not believe that in those cases the animal that was imported was sound, and had had foot-and-mouth disease for eight months, and that it was now finally recovered, that I do not believe.

6292. I suppose you will agree that foot-and-mouth disease is one of the most serious diseases we have to fight against?—Very serious.

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6293. Do you think it is possible that all countries could take some common action as regards this disease?—I think it possible, but not if it is true what some authorities are thinking that the agents of the disease can be spread by perfectly sound and not suspected animals.

6294. I think you did not quite understand my question. My question was this: Agreeing with you, as we do, that foot-and-mouth disease is one of the most serious diseases that we have to fight against for all countries, whether it would be possible, in your mind, for all countries to take common action for stamping out this disease?—I think it will be possible in this way, that everywhere the same measures are taken, and if contact exists by the way of diplomacy between different countries. The Government of a country, where an outbreak of foot-and-mouth disease has taken place, can give notice to the other countries immediately by the way of an International Bulletin. Then it is possible for the countries in the neighbourhood to take more severe measures in advance, and when in the countries where the disease has broken out severe measures are taken to prevent other farms being infected, the neighbouring countries will be protected in this way. Those communications will not always be in the interests of the country where the disease has broken out, but the Governments not only have to think of themselves but also of others. In this way it will be possible to prevent wide outbreaks of the disease, when declaration of the first case has been made as soon as possible.

6295. One more word before I finish: I suppose your veterinary profession in Holland are all of them well accustomed to foot-and-mouth disease?—Yes, they know it.

6296. Are you very strict as regards the training of your veterinary surgeons in Holland?—Do you mean if it is very difficult to become a veterinary surgeon?

6297. To put it this way: Have your veterinary surgeons to go through a course of instruction at a Veterinary College?—Yes, they must have a Diploma at a Veterinary College at Utrecht, but there are still some other veterinary surgeons that have not the Diploma. After the Law of Veterinary Instruction of 1875 was passed, no one may call himself a veterinary surgeon without having this Diploma, and now we have in all the country only about 40 men that obtained their Diploma from before this law, but they are very old gentlemen.

6298. Are they in any way connected with your Universities in Holland?—No, no. The State Veterinary School at Utrecht will become a High School of Veterinary Science. There is, at the Direction of Agriculture a law projected in preparation for the making of the Veterinary School a High School where the veterinary surgeons can obtain also the Degree of Doctor of Veterinary Science.

6299. You mentioned, in the first part of your evidence, nine District Inspectors; have they any special training?—No, they are chosen out of the ordinary veterinary surgeons of the country when they have the abilities for being a good supervising veterinary surgeon.

6300. (Mr. Bathurst, M.P.) If foot-and-mouth disease exists in Germany and does not exist in Holland, do you think that you could take steps to keep the disease out of Holland altogether?—It will be very difficult, because there are farmers that have their meadows in the one country and in the other, and we have, for a little country, a very large frontier. But now, in the future, there will be measures taken to watch it more closely and to make this transport of animals on the border impossible, and when the farmers have many disadvantages of that, then we will give indemnification.

6301. When the disease passes from Germany into Holland, you think the animals carry it?—That is not my personal opinion. I think not only the animals, but also the cattle wagons and also the cattle dealers.

6302. You think the disease is brought into Holland through cattle and the means of carrying cattle rather than through food-stuffs?—Yes, I think not by food; I think it is more the cattle and the persons.

When, for example, there is a horse-dealer in Germany that has foot-and-mouth disease in his stables and he comes into Holland to buy horses, then from his stables he can bring the infection.

6303. Does your Government insist upon any disinfection of persons coming from Germany who have been in contact with diseased animals?—Not yet, but it is recommendable to do so.

6304. You are aware that that cannot be the source of foot-and-mouth disease in this country, because we do not allow animals to come in alive?—Have you forbidden all animals?

6305. All live animals?—All live animals.

6306. Yes, imported?—Horses, birds?

6307. I should say all ruminants?—That is not enough.

6308. That is not enough?—Following my opinion.

6309. I want your opinion?—That is not enough.

6310. You mentioned birds just now; do you mean poultry when you say birds?—In general, I mean poultry, but there is a case reported in Holland that foot-and-mouth disease has been transported by geese, and the observer is a very experienced veterinary surgeon that knows the disease very well, and he excludes all other way of transport of the agents of foot-and-mouth disease.

6311. But there would be nothing to prevent birds flying across from Germany into Holland and carrying the disease with them, would there?—That is so, but the agent of foot-and-mouth disease, when it has not occasion to infect animals, dies very soon.

6312. You mean, if the virus were on the feet or wings of a bird it would die very rapidly; very soon on exposure to the sun and the air?—Yes, it will die very rapidly.

6313. How soon do you think?—Within a week.

6314. But it could be carried, of course, within that time across your frontier?—Yes.

6315. Or even from Germany into England?—Yes, that is possible; arrive in a few days from one country to another.

6316. And that you can never prevent by any Regulation you may devise?—That cannot be prevented.

6317. Have you formed any idea as to the reason why we have outbreaks of the disease in England?—No, but it is recommendable to forbid also poultry; then poultry and such animals that live in a farm have to remain there and ought to have no occasion to infect other animals.

6318. You think that poultry and other live animals are more likely to bring the disease to us than food-stuffs or litter; bedding?—The latter not so much, no. I think that transport wagons and all means of transport of live animals and live persons are the most dangerous, but ordinary foods, such as hay that has been dried and the hay that is exported, has not been in contact with animals, is not so dangerous.

6319. You think that the disease can be carried in straw?—In straw, that is to say, straw that has been in contact with animals a few days before. When on a farm, however, in a summer, straw has been got and is held apart from the meadows where are animals with foot-and-mouth disease, then I do not believe that this straw will transport the disease.

6320. You do not think that the saliva of animals suffering from foot-and-mouth disease and blown from a meadow on to a crop of either hay or straw would carry the disease in that hay or straw to this country?—Yes, that will be possible, but ordinarily the hay and the straw that is exported is not infected in this way; that is kept aside on the farm, and when it is infected I do not think that the agent holds longer than a few days.

6321. The virus would not live long enough?—Would not live long enough.

6322. It depends on whether the air and the sun can reach it or not?—Yes, but ordinarily the sun and the air arrive there on the straw and on the hay that is for food.

6323. But, if it is pressed and tied up tight in trusses, there would be the danger of carrying the germs of the

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disease then, surely?—Yes, when it is firmly infected in a special way, purposely for example by the saliva. Yes, then it is possible. But these foods are ordinarily separated on the farms and are not in contact with diseased animals. It is not the hay and the straw that is coming from the stable, but it is the hay and the straw that is coming from the stacks and from the field where there are no diseased animals.

6324. You think that there is no danger arising from clean hay and straw that has never been in contact with animals?—That there is no danger; there is extremely little danger. The material itself is not a material that gives much danger.

6325. I am not sure that I ought to ask you this, but do you think that we, as an island country surrounded by sea, could take precautions which would result in keeping the disease out of the country altogether?—I think you will not be able to keep it always out of the country. I think that will be very difficult, because the transport of a highly infectious agent is always possible, so it will be always possible that there will come an outbreak on a farm. You are, however, so isolated that you can stamp it out. When the first outbreak is immediately announced to the authorities, to the Government or to the Veterinary Service, and immediately the infectious agent can be destroyed.

6326. Then, as between one country and another, say between England and Holland, you think that the best form of common action would be for each country, immediately an outbreak takes place, to notify that at once to the other countries?—Yes, I think so. It would be very good for England that the first case in Holland would be immediately announced to the British Government, but because there is no transport so much from England to Holland, the danger for Holland is not so great as for England.

6327. You think that the announcement might be made more quickly from Holland to England than it is at the present time?—I would think this: I do not know what is the present method of communication, but I think it will be possible that several Governments take the same measure to announce immediately these cases, and then there is another method that the representatives of England in the Netherlands can always for themselves take measures and see if there are cases in Holland that are not announced to the British Government. There are several foreign countries that have their own service of information. We have ours in Germany and other countries for example. I believe, when there are cases of infectious disease in Germany, the Director of Agriculture is informed by their own Intelligence Staff in Germany.

6328. What time elapses, as a rule, between an outbreak of foot-and-mouth disease in the Netherlands and the Government of that country being acquainted with it?—When the Declaration is made by the proprietor, as he is immediately obliged to do, the Government can know it within an hour.

6329. Within an hour?—By telegraph. The Mayor of the Commune telegraphs to the District Veterinary Surgeon, and if it is an extraordinary case the District Veterinary Surgeon can give an immediate telegraphic report to his Excellency the Minister and to the General Director and to the Inspector of the Veterinary Service.

6330. And how soon after an outbreak are the restrictions imposed?—There is the Declaration; then the District Veterinary Surgeon visits as soon as possible. That is standing in the law. Advice can be given within half a day, and the Mayor is obliged to follow it; he has to do all that is advised. The District Veterinary Surgeon advises, but it is a sort of command.

6331. How soon would the slaughter of the animals begin after an outbreak is known?—That I cannot tell you for all circumstances. Taking the case that at six o'clock Declaration has been made, in the same evening the District Veterinary Surgeon will arrive, it is possible that he diagnoses that the case is probably one of foot-and-mouth disease, but that he will come back and see it by daylight. The following morning he will be there for example at eight o'clock; then all the animals have to be enregistered and valued, and in the night for example, at eleven o'clock or earlier, the slaughtering can

begin and the next morning all animals will be dead. I have seen such a case concerning about 30 animals.

6332. That would be within about 30 hours?—Within 30 hours. You must not forget that these measures of taxation and valuation take much time. One or two valuers must be appointed.

6333. Do you happen to know if Germany are slower in taking action than you are in Holland?—Formerly I have thought that Germany was more expeditious than we, but now I am convinced that it goes not so quickly as in the Netherlands; but I cannot say if the Declaration is better in the Netherlands. It sometimes occurs that the proprietor does not report, that he keeps it quiet for a few days; he will not co-operate; he thinks that he has the right to solve the question for himself.

6334. In Germany?—In Holland; or he takes on a few times the occasion to sell some sound animals for the market, and when all these animals are sold, then he reports.

6335. That is in Holland?—That is in Holland, and that is the reason why we could not stamp out the disease in 1907.

6336. Then, you think there is more co-operation between the farmers and the Government in Germany, than there is in the Netherlands?—In Germany, yes, but I believe that the measures taken in the Netherlands are better and more severe; we can have the help of military and police powers in isolating farms.

6337. Have all your district veterinary inspectors, acting under your Department of Agriculture, a knowledge of foot-and-mouth disease; would they all know it when they saw it?—Yes, of course.

6338. Would that be a condition of their appointment, that they should know all these contagious diseases?—No, that is not a condition. When they are appointed it is presumed that they know the disease.

6339. If they have obtained their college diploma it is assumed that they know all these diseases?—No. When a disease has not occurred in the country for several years, then they cannot know it. I have not seen rinderpest and I have only seen a few cases of contagious pleuro-pneumonia in my youth, when I was a boy.

6340. Unfortunately it is the same in this country. Is there any research going on in connection with foot-and-mouth disease in Holland?—Yes, there is an Experimental Research Department.

6341. There is an Experimental Research Department?—Yes, in Rotterdam. We have the State Serum Institute and there experiments are made. And in the Veterinary School we make experiments for the school itself on infectious diseases.

6342. They have not succeeded yet in identifying the germ of the disease?—Oh, you can say that we do not know exactly the nature of the virus of foot-and-mouth disease; it is a filtrable virus; it is so fine that we cannot see it with our ordinary microscopes.

6343. And all your scientific experts are agreed upon that, that no microscope will make it possible to identify the germ of the disease?—Then, you think that we cannot make experiments?

6344. No, I mean, as the result of your experiments, you have not yet been able in Holland to identify the disease with the microscope?—That is not necessary.

6345. It is unnecessary?—That is not necessary, the clinical symptoms are so characteristic that it does not need to be seen.

6346. Yes, but the difficulty in tracing the disease must, you admit, be greater if you cannot recognise the germ of the disease as present in food or other suspected articles?—Yes, but there is an answer; and that gives experience made in combating other diseases; we do not know the virus of rabies in the dog and yet we can combat it; we do not know the virus of rinderpest and we can stamp it out. There are other diseases with filtrable virus and we cannot see the germ, but we can combat the disease.

6347. Has anything been learned, as the result of experimental research in Holland, about foot-and-mouth disease during the last few years?—The result of experimental research is this, that it is possible to make a serum, and that this serum can help to give a smaller danger to an outbreak of the disease in sound animals

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when it is injected immediately after a case has been noticed.

6348. Protective inoculation?—Protective inoculation by serum. When you have a farm with diseased animals it is possible to give the surrounding animals a serum injection, and then the disease will not so easily break out there; it gives them immunity for a few days.

6349. For a few days?—For fourteen days or three weeks; only a serum injection.

6350. For a few days only?—Only injecting with serum. And if you wish to have immunity for a longer time you must have another injection; it must be also an injection of the virus and that is a little dangerous.

6351. Have you ever tried feeding serum to an animal or inoculating an animal with serum in order to find out what effect it would have upon that animal in producing the disease?—The serum injection has no detrimental effect.

6352. You are satisfied that horses cannot suffer from this disease?—No, I have given a description of foot-and-mouth disease this summer on horses.

6353. Have you seen it on a horse?—Yes, twice.

6354. The same symptoms?—The same symptoms, but not so severe in the beginning.

6355. Is that in the case of young animals only; have you only seen it in foals?—I have seen one animal that was diseased in a stable with 12 cows that had foot-and-mouth disease and the horse was standing aside, but in the same stable. The proprietor said to me that his horse could not eat so well as formerly. Then I inspected the mouth of the horse and saw that it had typical lesions and other symptoms of foot-and-mouth disease.

6356. Does it affect their feet?—No, and in summer I have seen it in three foals in a meadow where there had been cows with foot-and-mouth disease.

6357. Have you seen it in any other animals besides cattle, sheep, goats, horses, and pigs?—No, I have not seen it, but I am convinced that dogs and cats, fowls and poultry, can have foot-and-mouth disease.

6358. Have you ever heard of a case in poultry?—Yes. We have descriptions in very good literature; Spinola, for example, has given a description.

6359. Do you think that hares and rabbits can suffer from it?—I do not know that.

6360. Or rats?—I do not think rats.

6361. Can human beings suffer from it, in your opinion?—Yes.

6362. You have never seen a case, have you?—Yes, I have seen it.

6363. Are the symptoms similar?—Yes, and it is dangerous for little children, but it is very rare. It is a very rare occurrence; there are several cases reported, but it is very rare. I believe that in many cases when there is foot-and-mouth disease in cattle, the surgeon says that he has a case of foot-and-mouth disease, and that it is an ordinary case of stomatitis vesiculosa.

6364. You do not think that human beings suffer from it under some other name; that we give another name to the disease?—I do not think it, but I mean there is a difficulty because foot-and-mouth disease in animals is called stomatitis aphtosa, and in human pathology the name aphthæ is applied to another process than to the "vesicæ" met in foot-and-mouth disease.

6365. Just one word with regard to dung. You think that the disease can be carried in dung, I understand, unless the dung is in large quantities, and self-heating is taking place?—Yes, I think it can, but not in the case of self-heating, or when it has been exposed sufficiently to air and sun.

6366. Can you conceive any way in which dung might be the means of carrying it to this country?—When there is transport of dung that has not been lying a long time in an isolated place. When it is transported in wagons and in ships, in not a very condensed form, and it comes from a farm where there is foot-and-mouth disease, then I believe that the germ can be transported.

6367. You have not mentioned wind as a possible means of carrying the disease. Do you think the disease is carried by wind?—I think not.

6368. Not across your frontier from Germany to Holland?—It will be possible that a little saliva is taken by the wind to animals standing in the neighbourhood, but I do not believe in the transport from a very far distance.

6369. Then you do not think that the danger of suggesting carriage by wind would justify a large radius?—No.

6370. A large radius round an outbreak?—No, I do not believe that.

6371. (Mr. Nunneley.) There is just one question with regard to hay. You do not think hay is very dangerous, you say?—I do not believe that it is very dangerous.

6372. But is there any regulation in Holland to prevent hay being cut out of a stack and tied into trusses, as we call it, into bundles, on a farm where the disease exists?—That is forbidden when the farm is isolated and surrounded.

6373. But you say the farmers do not always report?—Yes, but when declaration has been made and the farm is isolated then there are military or police sentries. It is possible, of course, when notice has not been given.

6374. And the same, I suppose, would apply to dairy produce, milk, butter?—Yes. It is prohibited to take milk from the farm that has been isolated.

6375. Yes, when once it has been isolated the hay would not be allowed to come then?—Yes, but it is possible that when the declaration has been made by the proprietor he takes the occasion in the few hours before the coming of the authorities to export hay and other things.

6376. And, I suppose, you would allow that if that was done, the saliva might blow from the cattle that had got it and get on to the hay whilst it was being cut out and tied up?—But then I think that the danger is not very great. The danger is very small.

6377. (Mr. Richardson Carr.) There is only one question referring to the hay again. Do I understand that you feel that supposing there was a country where foot-and-mouth disease was prevalent, and that country was in the habit of sending to your country hay and straw which would necessitate a week's sea voyage, do I understand that notwithstanding the fact of it being prevalent you believe so little in the hay bringing the infection that you would allow that hay and straw still to come in?—I will give you my personal opinion.

6378. Yes, I mean your personal opinion?—When you can leave the hay of another country you must not take it.

6379. Therefore, although you do not think that is very risky, you would still prefer not to have hay and straw from an infected country?—Not from an infected country when there is disease such as foot-and-mouth disease there, and if I were in England then I would not import hay and straw from an infected country.

6380. From that country?—From that country. That is to say when the country is fairly diseased.

6381. I mean that?—When we have only a case in a country and it is stamped out, no, but when the danger has spread, and in every province of the country we have foot-and-mouth disease, and we take hay and straw and other foods from that country, that is dangerous. I would say that it is dangerous for you.

6382. You would say that it was dangerous to have hay and straw imported into England, if you were in England?—Yes, in the above-mentioned cases.

6383. You would not allow it to come in?—I would not allow it to come in.

6384. Then, about the packing. Do you think that the hay and straw used for packing, and which comes in boxes, is a source of danger?—That can be a danger, but it is very little danger.

6385. Why, not if hay and straw for fodder is?—Yes, but it is always in thin layers.

6386. Goods come packed in large crates, such as china and other things, eggs, and this hay and straw in which they are packed may go on the farm, eventually, it is used for litter in the towns, and may then go onto the farms?—I would think it is very little danger, but I cannot answer, it is so subtle a matter. I do not think it will be dangerous, but it is another question to allow hay and straw to be imported into

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England when we have in our country in all provinces foot-and-mouth disease.

6387. You certainly think it would be wise to prohibit hay and straw from any country where there was any disease?—If I were in England, and Holland had in every province foot-and-mouth disease in such a way, that it is not to be stamped out by slaughter, then I would prohibit them.

6388. Not have hay and straw?—Not have hay and straw.

6389. Do you think milk is a source of danger?—I think milk is a source of danger.

6390. You do?—Yes, I think so.

6391. (*Mr. Morrison.*) I understand that foot-and-mouth disease is prevalent in Holland now?—At this moment, no. We have had it, but at this moment the situation is very good.

6392. Do you think that the spread of it was due to numerous fresh infections from a foreign country, or from being carried from the original infection in your own country?—I think the first has been the case. The infection in the Province of Groningen has come out of Germany, and in Groningen the first case has not been announced. The District Veterinary Surgeon has notified only the second and third cases, and in this time the cattle trade has gone in the ordinary way, and afterwards that has given an outbreak of foot-and-mouth disease in a part of the Province of North Holland. Then, we have stamped it out in Groningen. But the second infection in Holland could not be combated. Then, the situation was such that Holland has been infected, and that out of this province other provinces have been infected, and Groningen for the second time.

6393. Then, I suppose you think the chief danger, after all, is really in the spread of infection from a centre where it has not been properly controlled?—I think so, yes.

6394. And you attribute that frequently to the farmer keeping the matter quiet and selling his sound animals?—Yes, I think that it is, and the other reason that he is in connection with cattle traders, and that they bring the germ to the market.

6395. What I did not understand was that, if he got full and generous compensation what his object was in selling his sound animals. Does he get full and generous compensation?—He fears that his cattle will be slaughtered. He has objections to the slaughtering of his animals. He finds that a very rigorous measure. He finds it very disagreeable. And in some parts of Holland the people will not have the slaughtering of the animals from a religious point of view, and so it happens that they do not report the disease.

6396. What becomes of your isolation when the disease has spread from one farm to another until the whole district is infected? What becomes of your isolation then? Do the rules that were put in force when there was only one farm isolated, apply to the district?—The whole district is isolated.

6397. The same rigorous rules apply?—Yes, that is to say in general. Then we have no rigorous special measures as we have when the isolation concerns only one farm. In the latter case people that go out of the farm have to be disinfected, but when we have the whole region, then that is impossible; then the measures concern the transport of cattle, of food, and of other articles.

6398. Would hay be forbidden to be carried out of such a wide isolated district?—Hay will be forbidden out of a farm which has been isolated, but not always out of the district.

6399. That is to say, supposing a whole district has foot-and-mouth disease, and it is isolated, a farmer could take a lot of hay and sell it for export from that district?—Yes, he would be allowed to sell it out of the third circle of the district.

6400. And that hay might come straight over to England?—That would be possible.

6401. And calves might also be taken down to the port and sent over to England from that infected district?—That is forbidden in England.

6402. Dead calves. There is a considerable trade in

dead calves?—First after examination you will have the calves.

6403. They are brought over to us slaughtered, in their skins?—Suspected animals remain under the supervision of the veterinary surgeons, and I think that it will not be allowed to export them to England, because there are very severe measures against exporting animals to England.

6404. But would you call an animal that was on an infected farm, suspected, provided that it was in sound health; you would not call that a suspected animal would you, if the veterinary surgeon said it was in good health?—Yes, it is always suspected, when it is out of the district it is suspected.

6405. You think that no veterinary surgeon then would allow a calf, no matter how healthy it was, to be taken out of that district for exportation to England?—No, but it is not under the supervision of an ordinary district veterinary surgeon. We have special veterinary surgeons there for that, and then I believe that our measures of export meat inspection would forbid the exportation to England.

6406. If it was sound and in good health?—If it was sound, but if it came from the suspected area.

6407. So that you could export hay or straw from that district, but not a calf?—I believe that it will be possible to take hay and straw out of the third circle of such a district, but not any animals that were slaughtered. I believe that would not be allowed.

6408. That would be probably for your own protection and not for ours?—Also for you. Then our meat inspection certifies that is for the principal part made for England.

6409. I believe these calves, with a certain certificate or label, are sent to us. Do you know anything about how that label is got?—That label is a certificate of the Export Meat Inspection Service, and the general veterinary inspector is also the chief inspector of this service, and the inspection of these animals is made by Government veterinary surgeons. They have their instructions immediately from the Director of Agriculture, and these are very severe. Also with other diseases, for example, tuberculosis, and they have the instruction that they cannot give a label if the animal is suspected or not quite sound.

6410. So that a calf that had any symptom of foot-and-mouth disease would not be passed?—Would not be passed.

6411. (*Chairman.*) Out of an infected area?—Out of an infected area it would not be passed.

6412. (*Mr. Morrison.*) You, of course, do not admit that it could be brought out of an infected area. You tell me that they would not be allowed to take calves out of an infected area?—In the Hook of Holland you have the meat inspection service, and there they know perfectly well what is within the circle or not.

6413. Then this inspection is carried out by veterinary surgeons?—By veterinary surgeons, yes. That is a State Service.

6414. (*Chairman.*) There are just three questions in conclusion I want to ask you. As regards this question of calves in their skins, you give a certificate now that they are fit for human food?—Yes.

6415. Would there be any difficulty also in granting that certificate in stating that they were free from disease, and had not come from an infected area?—No. There should not be any difficulty in that.

6416. There would be no difficulty in giving a certificate?—If it is asked by the British Government there would be no difficulty in doing that.

6417. There are two other questions. You say that in the first instance the disease is dealt with by slaughter?—Yes.

6418. And this is abandoned if the disease spreads?—Yes.

6419. When do you consider that the outbreaks are sufficiently numerous to give up slaughter?—That can only be said after considering the position, but the criterion is this, that we are convinced that slaughter will not check the spread of the disease that has spread over the country; now and then slaughtering and stamping out cannot have any effect.

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6420. Do you mean that it gets beyond your control?—Stamping out by slaughter is possible when we can say there is the disease, and it has come from there, and if we stamp it out at this place we have all the disease stamped out; but when we have cases here and cases there, and we cannot trace the germ from this case, or coming from here to there, or from there to there, then the stamping out and slaughtering of the animals, we cannot reasonably suppose that all germs are dead. And when we now have many such cases we cease slaughtering, and we take instead isolation, circles, districts— isolation, &c.

6421. Well, then, one more question, Professor. It is one that some members of the Committee would like to ask. In my examination of you I asked you about common action being taken by all countries as regards this disease. Would it be advantageous that this question should be taken up at the next International Veterinary Congress which meets in London, I believe, in 1914. Would not that be a good plan? How do you think it might be considered?—At the Veterinary Congress in Baden-Baden in 1899, there was a proposal from Professor Hutyra, of Buda Pesth, for an International combating of diseases, and that has had no result, because involved in this veterinary question there are economical and diplomatic questions. And there

The Witness withdrew.

Mr. F. P. MATTHEWS, of Messrs. John Thornton & Co., 7, Princes Street, Hanover Square, London, called in and examined.

6426. (*Chairman.*) Now, Mr. Matthews, I have not got any précis from you, but you have kindly offered to come and give us evidence. I understand you are a member of the firm of Thornton & Co.?—I am.

6427. You know what our Reference is, and I suppose I may take it from you that the outbreaks of foot-and-mouth disease which we had last year seriously affected the export trade of pedigree cattle?—Yes.

6428. Have you any views to put before the Committee as regards these outbreaks which we could examine you on; have you anything particular which you would like to bring out?—Well, I am more concerned in the effect of the outbreaks upon the foreign export trade of pure bred live stock than the exact causes, with which the veterinary profession is more concerned than I am. Of course, going about the country one hears all sorts of reports and rumours as to what the causes are, but, so far as I can see, the outbreaks come from no particular cause, so that, in my opinion, it does not come from any one cause; there are so many causes that the outbreaks may spring from, and, as long as it is raging on the Continent, it seems to me it is a very difficult thing to prevent an occasional outbreak in this country, but I think the most important point is, if this Committee could prevail on our Government to impress on the foreign Governments and the Colonial Governments the extraordinary care that they take in stamping out these isolated outbreaks, and they all have been isolated, it has not been anything in the nature of an epidemic, that they might modify the severe restrictions that they place upon our exports at the present time. For instance, Australia has now made a rule, which no doubt you know, that they will not import any animals for 12 months within 50 miles of an outbreak. Well, take for instance the Romney Marsh sheep, there was an outbreak at Rye, that prohibits the exportation to Australia of any Kent sheep for 12 months, which is a very unjust and a very ridiculous prohibition. The outbreaks having been stamped out in every case, it seems to me that if that was pointed out to the Australian Government, that they might only restrict just the area that the Board of Agriculture have restricted before, and remove their restrictions when the Board of Agriculture remove their own restrictions.

6429. Do you agree with a previous witness in the same line of business as yourself that foreign Governments have an exaggerated idea of the prevalence of disease here?—I am quite sure they have. Yes, they have a very exaggerated idea of it. I think it is a very

the question was left at the Congress in Buda Pesth. But in Buda Pesth there has been nominated a Commission to elaborate an International Infectious Cattle Disease Bulletin that would be printed as soon as possible and communicated to all other Governments; and in the bulletin are mentioned seven or eight infectious diseases. That is the position of the question now. I cannot say if it will be possible when you put the question on the agenda of the Congress in London that you will be more happy than they were in Buda Pesth; but, for me, I would find it a very interesting question.

6422. But you do not think much will come of it again, I am afraid?—I do not think it, because the visitors to that Congress are veterinary surgeons, and they have no diplomatic abilities.

6423. One more question, and then I have done; it is what I ought to have asked you when you commenced your evidence. What official position do you hold in Holland?—My official position?

6424. Your official position?—I am Extraordinary Professor of Comparative Pathology at the University of Leyden, and Professor of Infectious and Parasitic Diseases at the Veterinary School at Utrecht.

6425. Many thanks. We are most grateful to you for your evidence.—Thank you, sir.

small matter really, especially for countries which are already infected, such as the Argentine. Of course, in the Argentine they have their own axe to grind, as there are very many people over there who do not wish the ports open, because it gives them an opportunity of selling their own animals that they breed. As long as our ports are closed they have a much better trade for their home-bred animals.

6430. Have you considered at all the question or the advisability of having a Quarantine Station in this country?—Yes.

6431. For the export of foreign animals?—Yes, I had some conversation with Sir Thomas Elliott the other day upon the subject, and undoubtedly it would be a very excellent thing, especially now that other countries are starting in addition to the Argentine, to demand 30 days' quarantine on the other side. South Africa have just done so, and we are already having complaints from the breeders in South Africa, who wish to import, as to the additional expense that is caused, and risk, because they are going to slaughter without compensation on the other side, if the animal reacts to the test.

6432. "On the other side." What are you talking of?—Cape Town and Algoa Bay.

(*Mr. Richardson Carr.*) Do you mean a Quarantine Station temporarily in connection with foot-and-mouth disease, or do you mean for everything?

6433. (*Chairman.*) Well, I mean it rather for foot-and-mouth disease?—It would apply to any disease. But if the Station was on this side, it would save a very great expense, particularly in South Africa, where they are only buying cheap animals; they will not pay high prices like they have done in the Argentine, and the expense, which is something like 25*l.* to 30*l.* a head, would be saved on those animals if they were in quarantine on this side, and they accepted them straight away.

6434. What kind of time would satisfy them, do you suppose, as regards quarantine?—I think about 30 days.

6435. From what countries are we debarred from sending our pedigree stock?—At the present moment?

6436. Yes?—Only the Argentine, I believe.

6437. Only the Argentine?—Uruguay and South American countries.

6438. And you think they are not very keen to have our animals, some people, in the Argentine?—Some of them there are not at all keen.

6439. Do you think exporters from our own country, our own pedigree people, would have any objection to a

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Quarantine Station on this side?—No, they would welcome it.

6440. They would welcome it?—Yes.

6441. They would not mind the expense of the Quarantine Station?—No, I think not; it would not come out of their pockets; it would come out of the buyers.

6442. Are you sure of that?—Well, it would be a matter of arrangement.

6443. I should be rather afraid that it might come out of the vendors' pockets, but anyhow, that is, as you say, a matter of arrangement?—Yes.

6444. (*Mr. Bathurst, M.P.*) Am I right in supposing that in the case of South Africa to-day they have to pay for their own Quarantine Station?—On the other side, yes, they have.

6445. So that, if we had a Quarantine Station on this side, the South African or the other importer would not have to pay any more even if he had to maintain, or help to maintain, our own Quarantine Station?—No, he would not have to pay any more; he would be saved the freight and expenses of shipping, sending over, if it was in quarantine on this side, instead of the other.

6446. Do you think he would be prepared to have the charge thrown upon him in the case of animals which do not satisfy the test, or, in other words, do not pass sound out of the Quarantine Station?—Well, it would be a matter of arrangement in buying; he would have to buy subject to these conditions. In the same way now with animals, there are very few of us buying except under the condition that the ports remain open at the time it is required to ship the animals.

6447. You think that, if we had a Quarantine Station here, that most of the foreign buyers would be satisfied with our own tests of the disease, or do you think they would insist upon their agents applying the necessary test?—They might require, I think, to nominate someone in this country upon whom they could thoroughly rely; I think that would be sufficient.

6448. And for a time, at any rate, they probably would insist upon that?—I think they would.

6449. They would not be satisfied with a Government Certificate?—Well, I think they would want the name of the veterinary submitted to them; they would have to be approved by them; approved officials.

6450. But you think it might be arranged, at any rate to start with, that persons might be selected as Government Officials in connection with the Quarantine Station, who would satisfy the importers?—Yes, decidedly. There are certain names now that are so well-known to them that many of them ask for certificates by certain veterinary surgeons.

6451. (*Mr. Richardson Carr.*) There are only one or two questions that I want to ask you. You say that the outbreak of foot-and-mouth disease seriously interferes with the cattle export trade?—Yes.

6452. And, of course, the export of pedigree cattle is a very important trade?—Yes.

6453. But do you not think that there is also another big question in connection with it, that if we had a very bad outbreak of foot-and-mouth disease in England it would practically—if we got really a serious outbreak, an epidemic—seriously effect the milk supply of all our towns?—Oh, undoubtedly.

6454. It would be a very grave disaster?—Undoubtedly.

6455. There is that point, as well as the pedigree cattle, which wants taking into consideration?—Certainly.

6456. About the question of foreign cattle, owing to the contagious nature of this disease, do you think it would be at all a wise thing to start allowing foreign cattle in from infected countries?—No, I think it would be ruinous.

6457. You think it would?—Oh, entirely.

6458. And also, it has been suggested that there should be more research work in connection with this foot-and-mouth disease. Of course, no doubt it would be a good thing if it could be done somewhere where it could be done with safety, but do you think it would be a wise thing to have an Experimental Station in Great Britain?—I think it would be playing with fire.

6459. You do?—I think it would be a very dan-

gerous thing to have it in Great Britain itself. I believe, if we had it in Great Britain, the other countries would say we had foot-and-mouth disease, and they would stop importations of all kinds of stock at once.

6460. You think they would?—I do indeed.

6461. (*Mr. Bathurst, M.P.*) How do you think that we could satisfy foreign countries as to the limits of an outbreak so as not to unduly frighten them, as apparently we do now?—I do not think the foreign countries really appreciate the careful steps that are taken by the Board of Agriculture to isolate and stamp out these outbreaks. The best evidence appears to me to be that every one of them have been stamped out, except in just a case in Somersetshire where it was in a ring fence, as it were; there were so many outbreaks, but they were all confined to that circle and stamped out straightaway. Another in Derby, another one in Sussex, another one in Surrey; they were all stamped out at once. I do not think they appreciate the splendid way in which our Board deals with these outbreaks and stamps them out, and I think we want to impress upon foreign countries the organisation that we have here to stamp out the outbreaks. It wants pointing out to them that we have no epidemic of foot-and-mouth disease.

6462. Do you think that an official intimation from our Foreign Office and Colonial Office on this subject would remove some of their present restrictions?—I do; I think if they thoroughly appreciated what is done in this country to stamp out the outbreaks, that they would remove or modify very much their restrictions, and, if they thoroughly understood it, I see no reason why they should not accept a quarantine on this side of so many days or so many weeks, that our Government could give a certificate of absolute freedom from disease. I think it would be a very great thing for the export trade.

6463. As to the question Mr. Richardson Carr addressed to you just now in regard to the proposal to set up an experimental research station here, I understand you consider that might be regarded as a plague spot by other foreign countries?—I think it would. I think we had very much better try that in Germany or elsewhere, anywhere but in England.

6464. I was going to ask you whether you think we ought to go as far afield as Africa, or possibly India; do you think the same scare would be caused if we tried this on an island off our coasts?—I think the farther away the better.

6465. You do not think anywhere near the British Isles it would be wise?—No, I do not. I should prefer it to be a very long way off. I have no doubt it has been mentioned several times before, but I cannot help thinking from what I have heard, that some of these outbreaks have been caused by migratory birds. I think that flocks of pigeons very likely caused this last outbreak down in Somersetshire. I do not know whether you noticed at the time, there was an unusual crowd of pigeons there at that time, so much so that they organised huge shoots all over Somersetshire to shoot these pigeons, and it seems to me that if these birds come straight across from the Continent there is no reason why a great flock of thousands of pigeons should not start it in a meadow.

6466. I think they are supposed to have come from Scandinavia?—I do not know where they come from; they came from the Continent. If they come from a country where there is foot-and-mouth disease it seems to me a very likely way of bringing it.

6467. There is one other question I should like to ask you: The Argentine Government have closed their ports, have they not, to English exports, but not to Scottish?—No; not to Scotland or Ireland.

6468. I think I am right in saying that the result has been that the north countryman has had a very much better trade in cattle this spring, than the English?—No comparison. They have had splendid sales in Scotland. We have had poor ones in England.

6469. Do you yourself think that it is possible to draw a line, as a matter of logic, between England and Scotland?—I think it is ridiculous, absolutely ridiculous.

6470. Surely this is a matter that ought to be

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brought to the notice of the Argentine?—Exactly; that is the point I take; I think they might then modify very much their restrictions. The Argentine might say, so many miles from an outbreak like the Australians do if they wish to reduce the limit, but to draw a line between Scotland and England is ridiculous. I can quite understand Ireland which has the sea between, but England and Scotland there is no reason.

6471. Have you brought that matter to the attention of Mr. Casares, or to other Argentine authorities?—Yes. We have talked it over. They all see the ridiculous part of it, but they have little power.

6472. (*Chairman.*) One word on the point of the Experimental Station. Would you think it would be a good thing if we had an Experimental Station in co-operation with Germany, France, Holland, and Denmark, that it might be a good thing for ourselves, in some part of the world?—Yes, a very good arrangement. No doubt every care is taken in an outbreak, but if it is possible for wind to take the germs and that sort of thing, I do not know whether the arrangements are made that all animals which are infected, and all animals on a farm that are ready for slaughter, are kept in a covered enclosure. If they are running about outside, is not that a considerable danger? Immediately an outbreak occurs ought they not to be all put under cover and kept as closely as possible together in one place and not spread about?

The Witness withdrew.

Dr. J. GORDON PARKER, D.Sc., Principal of the Leathersellers' Technical College, 176, Tower Bridge Road, London, called in and examined.

6483. (*Chairman.*) I think you are Principal of the Leathersellers' Technical College, are you not?—Yes, sir.

6484. You have been principal of the college for the last 16 years?—Yes.

6485. And you have had a good deal of experience—25 years' experience—of the leather trade in England, Germany, France, Austria and America?—That is so, sir.

6486. I daresay you have heard that we have had evidence respecting Mr. Seymour-Jones's process, formic acid and mercuric chloride, for the disinfection of hides, and I understand that you yourself have carried out a number of these experiments with formic acid for the softening of dried hides?—That is correct, sir.

6487. I think what the Committee would like to know is, first of all, the cost of that preparation?—I may say that I have been permitted to look over Mr. Seymour-Jones's evidence, and I accept his statements with regard to the cost at the various foreign ports. I think they are correct. He has gone into it more closely than I have, and I think his evidence on that point is perfectly correct. I do not think the cost would be prohibitive in any sense of the word.

6488. You do not?—No.

6489. You have made experiments yourself?—I have.

6490. And you are perfectly satisfied with them?—I am perfectly satisfied. I may say, as Principal of this college, it is a college established by one of the old City Guilds, the Leathersellers' Company. It cost some 20,000*l.* to build, and they spend some 3,000*l.* to 4,000*l.* a year in maintaining it. I have the sons of tanners, leather manufacturers, from all over the world under me. I have some 40 students under me at the present time, and for the purpose of technical education we manufacture a certain quantity of leather, and naturally, to make my instruction as full as possible, we deal with all kinds of hides and skins, and we are constantly putting through, week in, week out, 20 to 30 hides from different sources every week, and 10 to 20 dozen skins from all sources; therefore, anything new that comes out I naturally test it for educational purposes, and for the past 18 months, I think it is, I commenced using Mr. Seymour-Jones's method of softening dried hides. His first plan, which he gave, I condemned because I found it too costly. He wanted a too strong solution used to commence with. I went

6473. Not spread about in the farm, you mean?—In the yards, and kept as near as possible together.

6474. (*Mr. Morrison.*) Before slaughter?—Yes.

6475. (*Mr. Hinds, M.P.*) If that bird theory of yours is right, how do you account for Jersey being so immune from the disease?—Well, I cannot account for it, except that the same thing applies, we have had no outbreaks in many parts of England.

6476. (*Mr. Richardson Carr.*) Might I ask one other question: Do you think hides might be a source of danger, Mr. Matthews?—Undoubtedly; anything that comes from the Continent, that is in contact with cattle, is a danger, but I do not think hides are any worse than the black calves which come to Hull.

6477. In their skins?—In their skins; and also I have always looked upon packing straw as a very great danger. I should not like to have it on a farm where I had pure bred live stock or anything of that kind.

6478. Would it answer any useful purpose if we had a representative at Continental ports to see the Regulations were observed?—At Continental ports?

6479. Yes?—Yes, I certainly think it would. Every precaution that can be taken is to the good.

6480. Would that man be a marked man to some extent, and known?—I do not think so.

6481. (*Chairman.*) Is there anything else you would like to say on this point?—I think not.

6482. Thank you.—Thank you.

on working with it, and found that by diminishing his strength, which he originally gave, by 50 per cent., I got equally good results. I worked on further and diminished another 50 per cent.; another 100 per cent. really, and now I have got down to one-eighth per cent. of formic acid, and I find that I can get perfect results.

6491. Now, Dr. Parker, that one-eighth per cent. will kill anything to do with foot-and-mouth disease virus: will it also kill the spores of anthrax?—The formic acid alone will not, but with the mercury, yes.

6492. The formic acid with the mercury, would that be costly?—No, it would not. I do not think it would cost more than 3*d.* a hide or 4*d.* a hide at the most costliest places farthest away.

6493. Very well. You say 3*d.* or 4*d.* a hide in that preparation which would disinfect the hides both from anthrax and from foot-and-mouth disease. Is it not a fact that that preparation not only cures, but it softens the hides?—Undoubtedly.

6494. And, therefore, although the people who buy these hides would have to pay possibly 3*d.* or 4*d.* more for them, still at the same time they would benefit by the increased value due to the action of this solution in the way of curing and softening?—Undoubtedly. Might I perhaps explain that a little bit?

6495. Certainly.—The trade has grown up in the importation of dried hides from all over the world gradually. One has got accustomed nowadays, if a man is a tanner, to buy hides from, we will say, China averaging 25 lb. weight. He knows that that hide will produce him a certain weight, butt or bend, that is a certain piece of leather. The tanner gets accustomed to tanning a certain weight of hide, therefore he knows that a 25 lb. hide will produce him, we will say, a 30 lb. butt. He knows that is going to suit his customers in the trade he is doing. Now, if you alter that method by softening, we will say, with this formic mercury process, those hides will then come on to the market weighing, instead of 25 lb., probably 60 lb. You have got to teach the tanner in England that that 60 lb. hide was formerly a 25 lb. one, and, therefore, you are going to cause a little bit of trouble in the tanning trade by them having to re-learn their business with regard to what hides will specially suit their purpose. Do you follow me, sir; what I mean?

6496. Yes, I do quite. Well then, you feel that the present mode of preserving hides by drying is unsatis-

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factory and leads to great waste, do you not?—Great waste, sir. Great economic waste indeed, because you can never rely upon natives or even stockmen away up in South Africa in outland farms or away in the inland of South America, or China, or any of those places, where they do not know anything about preservation. Their object is to kill the cattle for meat. The hide is quite immaterial; they will perhaps sell it for a shilling right away, miles and miles from civilisation. Well, the hide is left on one side till they have trimmed the meat. They have killed the beast, taken out the entrails, and dressed it ready for food. The hide lies till they can attend to it. It may lie two or three days. Well, it has begun to undergo decomposition. By pegging it out on the ground or stretching it out on rails, they may dry that, and when that hide is dried it looks a perfectly preserved hide. Then, when we get it into this country as a dried hide which we have purchased, we put it into water to soak it. The putrefaction has only been arrested by the dehydration. The result is that, as soon as you put that hide into water in the tanners' pits to soak back, it begins to go into pieces, and very likely the whole hide, or portions of it, will run down the drain. I can instance that. I remember it was impressed upon me by one of the first masters I had. After I had been trained to tanning, I went over to Germany as manager of a tanyard in Germany. I do not think I was quite capable of it, but still, at the same time, I was induced to introduce the English methods, and after I had been there some time I was sent by my employer to Hamburg to buy dry hides. I had never bought them before, but I had to go up to the auction to buy them, and he gave me this instruction: "When you make your calculation in buying these hides never calculate at 100 hides, but calculate it 75, always calculate on 25 per cent. going down the drain. If you calculate on that basis, we will probably make money." And at the present day the same thing holds good. One calculates on only getting 75 hides out of a 100.

6497. I suppose you do consider that hides coming into this country are a great source of danger?—A great source of danger, sir.

6498. A great source of danger?—I may say that I have been very closely in touch with this, because this research work on anthrax which was done by Dr. Ponder was done under me, that is to say, nominally under me. My governors, the Leathersellers' Company, found the money for it, and Dr. Ponder was supposed to work in conjunction with me, and I went round the wharves in Bermondsey, and I also went to Liverpool with him, and we got the men who were working with the dried hides. Dr. Ponder pared their nails and took the dirt out, and we found anthrax spores in them. They had not got anthrax, as you must scratch yourself or get it into the skin, but in several cases we actually got anthrax spores underneath the nails of these workmen.

6499. Then, from your large experience, really you know of no better solution for disinfection of these hides for the disease we are thinking of than this formic acid and mercury?—That is quite right.

6500. Do you think that there would be much criticism by the trade if this was suggested?—That is the point I am a little bit afraid of. I am afraid of that; there would be an uproar.

6501. Notwithstanding what you say, that although it might cost 3d. or 4d. a hide, still in the long run they would not be the losers, from this preparation being advantageous for curing and also for softening?—Well, at first there is bound to be a great uproar. It might take two years to get over it; I am speaking generally.

6502. You think it should be done under direction?—I am afraid you would upset the trade to start with; because, you see, the shippers at the ports at Singapore, or wherever the hides come from, would have to have these pits to start with.

6503. Yes; but my point rather is this: supposing in this country there are certain licensed ports where these hides could come from; that would obviate that difficulty which you are already alluding to now?—Yes, it would.

6504. And, I suppose, you would be in favour of having all these hides disinfected at these licensed

ports, at the port of embarkation?—I think so, undoubtedly.

6505. But would not the question of licensed ports do away with the difficulty which you have just now mentioned?—Oh, yes, I think so. I believe that when the tanner got these hides over to this country and knew that when he bought a hundred hides he was going to have a hundred coming to leather, I think he would be pleased; but you have to teach him first.

6506. Well, everybody has got to be taught by experience?—I think so; and I think you will find the tanning trade is nearly as conservative as the agricultural one.

6507. (*Sir Harry Verney, M.P.*) Only a question as to the cost. I understood you to say that what they have to spend in one direction they would save in another?—Undoubtedly.

6508. So that absolutely they are not losers?—They would not be losers, because, you see, the hides which come from abroad, wherever they come from, are nearly all of them sent over and sold by public auction. The higher the price they fetch in the public auction the more the shipper gains. You must remember that in places like Singapore, and India, and Manchuria, and places of that sort, there are men who speculate, and they buy these hides all round the uplands. Perhaps they come through four or five hands before they reach them. They collect them, and put them into weights, as far as they can, and send them to this country. They are the people who are to gain the money, the intermediate men. Whether that money will finally filter back to the original man or not, I cannot tell.

6509. Yes, but that is the point, is it not?—I presume it would.

6510. That is, whether the opposition is great or not entirely depends on that?—I suppose it would.

6511. The one is a certain loss and the other is a positive gain?—That is true.

6512. If that is so, one does not wonder quite at the question of uproar. Can one get at figures, as a whole, as to the certain loss. Can you tell me, for instance, the value of the import of hides, skins and furs for a year, roughly?—Not from memory; you have had that in evidence, it runs into millions.

6513. I understand 15,000,000l.?—I think it does; I am not surprised at that figure.

Can one get approximately at the certain loss on that figure; it must be something very large?

(*Mr. Richardson Carr.*) Do you mean the losses to the dry hides?

6514. (*Sir Harry Verney, M.P.*) Loss to the trade as a whole?—Taking it all round, the original loss from the original shipper to the tanner, and finally to the boot manufacturer, you can put down safely at 33½ per cent. at the present time; I am sure I am not exaggerating, I am understating it.

6515. What would be the cost of this process; what would be the loss in that sense; the cost of Mr. Seymour-Jones's process. The cost is 3d. or 4d. a hide you have told us; what does that mean on 15,000,000l.? Have you any idea. What I want to get at is the extent of the uproar in the trade. You say there will be a certain loss to the trade, in your opinion, to be recouped later?—I do not think I go so far as to say there would be a loss; I say there will be an uproar.

6516. There will not be any loss, because what they lose on the one hand they will gain on the other. What will they lose on the one hand?—I do not quite follow you; why should there be a real loss?

6517. On balance there is no loss?—Why should there be a loss, to commence with apart from the balance. Suppose I happen to be in Bombay or some port in the East, and that I suddenly start wetting these hides according to this process, and send them over to the English market; well, the tanners will nibble at those till they know where they are.

6518. But who will pay you; the tanner?—I shall get the price they fetch at the Mincing Lane sales.

6519. Yes, the tanner would have to pay for it?—Undoubtedly.

6520. And he will get it back, in your opinion?—Oh, yes.

6521. That is what is not certain, is it?—I think it

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is absolutely certain, because when a hide comes over in the dry state, the man who examines that, even though he may be an expert, cannot see all the faults; he cannot see the latent defects. Now, as soon as you get a hide in a wet state, you see all the defects, latent and others.

6522. Then why any uproar in the trade?—Because it will alter their present methods of buying, and they will have to learn first of all what a wet hide will yield in leather as compared with the former methods of buying dried hides. If you buy dried hides you reckon on a dry hide to-day that you can get, I am speaking roughly, but let us take this simply for argument, suppose that from a dry hide you get 200 per. cent. of leather out of it, from a wet hide you only get 90. Now then, here is a hide cured by a new process. Am I going to get the 90, or 110, or 75, and the tanner has to prove it first?

6523. That is a very small matter really?—Excepting that it takes six months to prove a thing. You see the tanning trade is used to them. One talks about chemically tanned leather, which does not exist. It takes six months to tan a good butt of leather.

6524. Would the trade accept it?—That is what I believe. I said, in answer to the Chairman, probably in a couple of years it would simmer down. The tanners are no fools; if they see an advantage they will go for it very quickly.

6525. What I want to get at is, there is no question of money in it?—I do not think so.

6526. (*Sir Bowen Bowen-Jones.*) I have scarcely anything to ask, because you have answered most of the points which have occurred to me. There is one thing I did not quite understand, how far have your experiments been conducted in a practical way to represent the tanning of the hides generally, as in a tanner's yard?—I think my experiments have been absolutely the same as they would be in a tanner's yard, excepting where the tanner deals with a 1,000 a week, I have dealt with 20 a week.

6527. Do you think the number you have dealt with is a fair average to form an opinion upon as to the merits or demerits of this process?—Well, sir, on my own experiments carried out on my own experimental tan yard, I should say personally, yes; but I would not like to give that to the public. But then, besides that, I have superintended experiments on thousands of hides in other tan yards, of which I am consulting adviser, and in a Bristol tan yard I have seen through some 3,000 hides, and in a north of England tan yard I have seen through some 2,000 hides, and all of them softened by means of this formic-acid process, and in each case the tanner has got a better yield of leather than by his ordinary process, and that process is gradually but slowly being adopted.

6528. All those tanneries that you are now alluding to are tanneries worked for commercial purposes?—Oh, yes, tanneries with 100,000*l.* capital, and turning out a very large quantity of leather per week.

6529. And in each of those cases has the tanner approved of the process, and considered it to his advantage to use it?—Yes.

6530. Have you any information of a tanner in the opposite direction?—Yes, one, and that one case I can account for, and I will explain afterwards. In that one case the tanner found that the process cost more; something like 2*s.* a hide. But I did not hear of this until some months after he had made this experiment, and I found it was on East Indian hides, and these East Indian hides had been plastered over upon the flesh side with an alkaline earth. The result is that the alkaline earth had killed the whole of the acid, and he had to use so much acid that it made his cost too high.

6531. It increased his cost?—It increased his cost.

6532. Could he have removed that alkaline earth by a cheap process?—Undoubtedly. If he had had the common sense to soak the hides in water for a couple of hours beforehand, it would have done it.

6533. And then apply the formic acid and bi-chloride of mercury?—Undoubtedly, applying only the formic acid. I do not see the use of bi-chloride of mercury if you are not disinfecting, and if it is merely a matter of softening you do not require the bi-chloride of mercury;

you only require the bi-chloride of mercury for disinfection.

6534. I think Mr. Seymour-Jones mentioned that, but I think we are assuming for the purpose of disinfection we require the bi-chloride of mercury as well?—Quite so, at the port of embarkation.

6535. To what extent did this tanner use the process that was so costly to him, that he disapproved of it?—I do not suppose it was on more than 500 hides. I think he did four or five packs. A pack is generally 100 hides. He tried it and gave it up, and wrote to me to say that the process was too expensive.

6536. Did you remonstrate with him and point out to him the mistake he had made?—No, he took up such an attitude that I thought I would wait till I saw him. After some months he was staying with me in London, and I said to him "Now, tell me the details about these," and he told me. I asked what hides were they, and he told me what hides they were, and I asked him a few more questions, and finding out that the solution went milky and gave forth gas, I drew my own conclusions, and told him where he was wrong. He said, next time, when I am trying some more dried hides, I will have another go at it. Whether he has done so or not, I cannot say.

6537. You do not know?—I do not know.

6538. Really the evidence of practical men, with this exception, is in favour of the use of the solution?—It is undoubtedly in favour, sir. I may say, I would add, that as Principal of this College, it is one of my duties to introduce any new thing of this sort to the trade, and while I have been carrying out the experiments in Bermondsey, I have always invited all the London tanners to come round and see the results, and they have come round and seen the results, and expressed themselves satisfied, and I understand that other tanners in London have now started using the process, but as I have not the entry into the yards, I do not know how far they have got.

6539. Apropos of what Sir Harry Verney was talking to you about, do you suppose that the hides softened in this way, disinfected I will say in this way, on the other side, which cost 4*d.* a piece, would cost more than 4*d.* more when they were sold in this country?—I think so, undoubtedly; that is my firm impression.

6540. Why would they cost 4*d.* more?—Because the tanner would know he was buying something he could judge, instead of buying what I might term a pig in a poke.

6541. Very well, in that case the tanner would get for his extra price full value for his money, I presume?—That is my impression.

6542. That being so, that cannot be detrimental to the tanner's interest that such a process, if effective, be carried out?—I do not think so, sir. Of course, you have to look at this. You increase your freight, you first of all increase trouble at the port of embarkation; you have got to instal this apparatus. Then you have got to send over wet salted hides instead of dry hides. They do not pack so tightly; they would have to be packed in another hold; it would alter that slightly; they would probably go to other wharves in this country. Instead of going to the dry-hide wharves, they would go to the wet-salted wharves.

6543. The exporters would be put to that increased expense?—The carriers, I think, might raise trouble, yes.

6544. The exporters would be the men who would have to pay for that curing?—Quite.

6545. And the construction of the pits, and for the freight?—That is so, sir.

6546. Would it be prohibitive or detrimental to them to pay these extra costs?—Oh, I do not think so.

6547. And sell an improved article?—No; as soon as they saw the extra money they would not grumble at all. It is to convince them first of all that they will see this, that will be the difficulty.

6548. Would those costs, in your opinion, be prohibitive. We have got the value of curing the hide at 3½*d.*, I think that Mr. Seymour-Jones said, the very largest hides?—Yes.

6549. Would the construction of the pits and the extra carriage, in your opinion, cause the attendant

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expenses of the process to be prohibitive?—The freight from the most distant port I do not think could make a halfpenny a hide difference.

6550. That brings it up, each big hide up to 4*d.*?—Yes.

6551. What would the pits cost and the soaking; they are soaked for 24 hours, I think?—You could make pits for 5*l.* each easily, your capital cost would be say 5*l.* To handle 1,000 hides a day, you would want 25 pits to do 1,000 hides a day, and you would want, probably you would get 200 hides into a pit, and you would want two men to haul; for four pits, you would want about 10 men to do that; 1,000 hides a day.

6552. The pits would be permanent, would they not?—The pits would be permanent, but you have to have the men to put the hides into the pits and the men to get them out.

6553. Roughly, what do you think the cost per hide, that is the largest-sized hide, would be for the upkeep, the maintenance and manipulation. Taking it at your calculation, I do not think it came as high as 3*d.* per hide?—I do not think it would come to much more than 1*d.* a hide, in addition to the cost of the material.

6554. You think the cost of the material would be about 3½*d.* to 4*d.*?—Yes, about that. I have not gone into that closely, but the extra hauling and handling, I do not see that need run to more than another 1*d.* at the outside; it would not run to 1*d.*; 1*d.* is far outside.

6555. Then, say 1*d.* for transit, for freight?—You are taking a very outside estimate at 1*d.*

6556. The whole of the expense would come to under 6*d.* per hide. That I would guarantee; that is absolutely the outside; 6*d.* would cover everything.

6557. You are satisfied, I suppose, that that process will kill the spores of anthrax, as well as foot-and-mouth disease?—I know for an absolute fact it will kill anthrax, and knowing how much more sensitive the germ, or whatever it is, of foot-and-mouth disease is, it is bound to kill that too. There is one point that I did not notice in Mr. Seymour-Jones's evidence; that after you have soaked the hide it is necessary to salt it and, therefore, you have got the cost of your salting to add. Now, salt is expensive at some of these outlandish places. I do not remember whether he gave that or not. You have that to consider, of course, in your extra cost, but I do think you could bring those hides over to this country at an increased cost of 6*d.* per hide.

6558. (*Mr. Richardson Carr.*) Including salting?—Including salting, and when you reckon that on a hide which would sell here for 30*s.*, or about 30*s.* each, it is not very much money.

6559. (*Sir Bowen Bowen-Jones.*) Then it is clear, in your opinion, that this process would be an advantage really to the leather trade in the long run, although it might, at the moment, create some little opposition in the trade, because it was not understood?—That is so, sir. I maintain, and I say without any hesitation, that it will be an immense advantage to the leather trade, but I fear that it will cause a considerable amount of trouble to start with.

6560. Well then, supposing it were carried out in the way that our Chairman has suggested, that is, by applying it at some of the ports in countries where infection is most rife, applying it tentatively, do you not think that the trade would fall in, after acquiring a knowledge of these methods?—I believe so; I believe if there were one or two ports had started this process that the tanners who bought hides coming from these ports treated on these lines, would be so pleased with it that they would demand it from their other shippers.

6561. (*Mr. Nunneley.*) You say that these hides are dry before they come down to the ports?—That is right.

6562. Would that not still be necessary if they were going to be treated in this way at the ports?—I think it would, and undoubtedly I do not think you could possibly inculcate the knowledge into the native away up in the wilds.

6563. You say that the process of putrefaction has partially begun sometimes?—That would be right.

6564. Would not that be the same still; would not

that be shown?—That would be shown out there and that hide would never come to this country.

6565. It would stop a certain amount?—It would stop a certain amount.

6566. (*Mr. Richardson Carr.*) After it was wetted?—After it was wetted. If you wet those hides back, you are to sterilise those hides and prevent them going further. The tanner, when he gets them to this country, puts them into water without any preservative whatever, except a few tanners who know a thing or two, and they have a few disinfectants to prevent the thing going further.

6567. Still, there would be that amount of loss on the export, on the other side?—Undoubtedly; he would get hides coming into his place, he would put them into water and, very likely, after being in water 48 hours, there would be holes in several places. He would sell them locally, presumably, for what he could get, but he certainly would not go to the trouble of shipping them to England.

6568. That raises another point of view to ask you on: would not that tend to make the shippers at those ports of exportation rather refuse to go in for this process, and if we in England insisted upon it, would they not send their hides elsewhere?—That is a great danger. I see that point. I quite see that point. In fact, I foresaw it, and I do believe—that question has not been asked me—if you do put on such restrictions to commence with, you would be liable to drive those hides to countries which have not such restrictions. And, unfortunately, bearing that out, there is a great tendency at the present time for hides which used to come to London, Liverpool, Bristol, and other ports to go to Hamburg, Havre, and Antwerp. The reason of that is partly because the shipping charges at these ports are lower than they are at our ports in this country, and at the present time hides which used to come to Liverpool 25 years ago are now going to Havre, Antwerp, and Hamburg, and the British tanner has to buy them back from those ports.

6569. Then, if we put on those restrictions, unless other countries did it as well, it would add to that tendency?—I fear that it would add to that tendency.

6570. Would not our importers very strongly object to it on that account?—Yes, I am afraid they would to start with; but I think that they would very soon find the value of it, and if they once saw that they were going to get more money for their hide, then it would go on merrily.

6571. Yes, as regards our importers, but would it not be a long while before you could persuade the exporters on the other side to do it, and, in the meantime, they would send all the hides in the same condition as they send them now to other countries, unless you could get an International Agreement to get all countries to do it?—Yes, you are right, in one sense, but, after all, the man who pays the highest money will get the hides, and the English tanner must have his hides; he must get them from somewhere.

6572. He would give more money, because he would buy no rubbish?—He eliminates the danger.

6573. The stuff they leave behind is no good to anybody, consequently, if he paid a little more it would pay the exporters?—Not a bit.

(*Mr. Nunneley.*) From what I know of human nature, and from what I have heard of human nature in the East, would it not be difficult to get these exporters to go to the expense of these pits when they know that, at first, it would be a loss to them?

(*Mr. Richardson Carr.*) Would they not get more money?

6574. (*Mr. Nunneley.*) No, not at first, until our tanners knew?—I do not think they would lose to commence with; I mean, I think they would get a little bit more money event to start with if it were introduced carefully.

6575. You say that, so far as regards the preservation of the hides, the formic acid alone would be sufficient?—Yes.

6576. Does the mercury add at all seriously to the cost?—Yes, it does. The mercury is expensive, and it does add to the cost, but the formic acid will not ill

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anything which is already there; it will only preserve them for the time being and soften them.

6577. If our Government wanted an Order to get the hides disinfected, and insisted on the mercury as well, that would add considerably to the cost; of course, the whole cost is not very much?—The whole cost is not very much.

6578. (*Mr. Richardson Carr.*) It is included in the cost?—It is included in the estimates you already have.

6579. (*Chairman.*) On that point I suppose you approve of what Professor Proctor suggested, that the disinfection of hides at the port of embarkation should be treated experimentally at one port first of all, just to see how it answered; you agree with that?—I think that an excellent idea.

6580. Just to try it to see how it answered?—Yes. I think there is no doubt, sir, that a great deal of the disease which accrues from dried hides comes from the dust and the careless method of handling. Even this morning, just as I was coming here, I happened to come on a bus and came over Waterloo Bridge, and there was a railway delivery van with two bales of hides on it and four boxes of oranges. Well, those hides may have had anthrax, and anybody eating the oranges might possibly get anthrax from it. Now, that is in London! There is a great deal more carelessness at the ports and on the ships to my own knowledge, although I have not been out in the Far East, but I have been all over Europe and Asia.

6581. Would you prefer, instead of testing it at one particular port, that an International Agreement should take place with other countries on this subject?—That would be better, sir; but I would rather have half a loaf than no bread at all.

6582. But, if they would come into it and try this system all over, you think that that would be better even than the proposal I put before you?—I do, sir.

6583. (*Mr. Morrison.*) I understand that you estimate the extra cost of the whole process compared with the present process at about 6*d.* a hide?—At about that; that would be an outside figure.

6584. Then you have 25 per cent. fewer hides to sell?—25 per cent. fewer hides to sell.

6585. But have you not 25 per cent. less, as you leave 25 per cent. of the hides at the port damaged. You mentioned at the beginning of your evidence, if you got 75 per cent. of good hides you would be satisfied?—I did, but that is 25 years ago; civilisation has advanced since then, and the hides that we get dried from South America you can reckon on 100 per cent. of these being good, because they come from the big slaughter yards where they are slaughtering many hundreds a day. It is those hides which come from Manchuria and away in Thibet and in the outlying districts where civilisation has not a look in; it is these hides you have to beware of, and a tanner knows what he is dealing with.

6586. What amount of loss would you expect in these hides; what percentage of loss?—Well, I think you might go to 20 per cent. now on these hides.

6587. Then you would require to sell your hide when you get it to this country, treated by the new process, at 6*d.* per hide more, and at, I suppose, 20 per cent. more to make up the loss?—Well, whatever that loss might happen to be out at the port of embarkation, that would have to be put on.

6588. It might amount to 20 per cent.?—It might with some class of hides.

6589. But in South American hides very little?—I should say nothing.

6590. Do you think one of these Manchurian hides would be worth 20 per cent. more than it is at present?—Yes, undoubtedly. A man at the present time cannot tell what he is buying at all. He sees something that looks like a hide; he has to wait until he gets through his first process before he knows what he has got.

6591. Your freight must be considerably more, because you mention a 25 lb. hide would swell up to 80 lb. after being treated with the water and so on?—That is right.

6592. Would not that add a good deal to your

freight than you estimate?—I think salted hides, by reason of that fact, can be carried in the lower hold, and they come at a lower rate than dried hides. I believe that is so. That is why I put my price at somewhere about 1*d.*

6593. And then you would have fewer hides to carry if you had some damaged ones you left behind?—Quite.

6594. You, I suppose, would recommend, if possible, an International Agreement as the best solution of the difficulty?—Oh yes, the ideal.

6595. But failing that, I do not exactly see how you would set about getting any one port to carry out that one process. If you could get a Colonial port perhaps they would make it compulsory, I suppose, on all hides to undergo that process before they were exported, but you could not expect that in a Manchurian port?—No. The only large Colony that exports dried hides to any extent is South Africa; Australia sends everything wet salted, or nearly everything wet salted. Canada sends everything wet salted. Of course there are smaller Colonies that send some dry hides, but South Africa is the big dry hide place—Cape hides.

6596. Do you think it is a feasible project to ask South Africa to make it imperative that all hides should undergo the process before exportation?—I am afraid that unless you had some grounds for that, such as an outbreak of anthrax—you can put the reason that you wish to disinfect the hides from foot-and-mouth disease—it is a difficult thing to do.

6597. We could institute it, so far as we are concerned, but I mean, could you expect any of our Colonies to accept that as a law which would be operative upon all nations exporting their hides?—No, I am afraid you could not.

6598. You could not expect that?—No.

6599. Then how would you begin? Suppose you fixed upon one port, it would be a hardship surely upon our shippers? At once they would say, we will send our skins to the Continental ports?—Yes.

6600. How would you get them to send them to our ports, if they are to do it at a loss to begin with?—I am afraid that is a subject upon which I cannot give any information. It is a very difficult thing. That is a matter for Government to see its way out of.

6601. If you agree they are going to lose money to begin with, that is the difficulty you have to get over; how are you to get them to begin?—You have got it by influence to start with. I see the difficulties; I see enormous difficulties, other difficulties that we have not thought of perhaps; so far the whole thing bristles with difficulties, but it surely is in the power of the Government to get some ports to try it experimentally. Perhaps the Board of Trade might guarantee any loss on so many thousand.

6602. That is to say you would go the length of advising a Government subsidy, by way of an experiment, at a certain port, or guaranteeing loss?—I would guarantee the loss undoubtedly. I think you would get private people even to do that who were converted, if I may use that rough expression.

6603. And you are of opinion that the loss would not be very great?—The loss would be very little. May I put it this way, that suppose now, we will say, that at next month's Mincing Lane sales there is a parcel of 5,000 hides labelled for sale under the hammer cured with formic acid and mercury. Every tanner will come into the room and say: "What the dickens is this you have to sell? Here is an experimental lot; well, I will have a go at it." And suppose somebody thinks he is going to get a bargain he will bid 3*d.*, another man a little more risky 3½*d.*, another man 3¾*d.*, and if a man happens to know what they are worth he will perhaps go to 4*d.* When that man gets these hides he will come back at the next sales, open his mouth a little wider and very soon it will get over the trade that these hides have come out right. Only, at these first two or three sales there will be a loss.

6604. Suppose the suggestion were adopted, have you any suggestion to make as regards the suitable port to make the experiment at, from your knowledge of the trade?—I would rather have it done in South Africa than anywhere else. We get so many good hides

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from there. We have our own kin there to deal with. If you go out to Singapore you have a lot of thieves to deal with.

6605. Is there much danger of anthrax from South Africa?—I should not think so; I have not heard of any.

6606. (*Sir Bowen Bowen-Jones.*) I should just like to ask one or two questions with reference to this last evidence. You say the probable loss from badly dried hides from the East, in Manchuria and Thibet and so on, is about 20 per cent. you think now?—I should say so, sir, 20 per cent. of their total value. I would not say that 20 per cent. of the hides would go down the drain, but when these hides came over here they would be 20 per cent. less value than a green hide would be.

6607. With reference to the loss on those, is not that loss now discounted by the buyer who purchases them?—It is.

6608. And would it not be equally discounted by the buyer who purchased them when he had to cure them on the other side by this process you have been talking about?—Yes, I think it would be, undoubtedly.

6609. So that the loss would absolutely disappear?—The loss would disappear in that case eventually.

6610. Now then, we come to the other thing about the difficulty of applying such a suggestion to disinfection at the port of debarkation. You are aware that the United States of America will not import now without disinfection; are you aware of that?—I am aware that it is on paper, sir.

6611. Well, it has been given in evidence that such is the case?—Yes.

6612. Whether it is applied perfectly or not, it is an existing law?—But it is not applied at all, sir.

6613. Anyway, could not this country prohibit the importation of hides from certain countries where disease is known to exist and carry it out effectively?—Certainly.

6614. We will say at some of the Eastern ports, getting away from our own Colonies, that this country makes the prohibition except under conditions of disinfection?—Yes, certainly, sir. I answered Mr. Morrison that that was my meaning, that if you had a country where there were outbreaks of disease, that then you have the right to step in and say: "As long as this disease exists I will have the hides done in that way," and there you have a very good excuse.

6615. Exactly; if we applied such a recommendation tentatively it should be to such countries as those that I am now speaking of?—Quite so.

6616. Now what countries would you recommend for its application?—Well, you have got foot-and-mouth disease in the Argentine at present.

6617. Well, I was thinking more of these Eastern countries?—Are you thinking of anthrax?

6618. I was thinking of anthrax, and such a disease as foot-and-mouth disease, and of these Eastern countries where these hides are so badly prepared?—Well, then you had better take the most serious disease, viz., anthrax; then you can at once deal with China and Manchuria and Russia, and, of course, that includes Siberia as well. I include in Russia the whole of the Russian Empire.

6619. Where are they imported from?—In China, they come from various Chinese ports. They come very largely from Singapore, and then you get hides which come over from Java and Sumatra and all those islands round about, which all come out from China originally.

6620. If China was expressed it would include all the ports, would it not?—I am afraid it would.

6621. Manchuria, they would ship from Chinese ports?—Largely from Chinese ports.

6622. And Russia?—Russia, they would come from the various Southern ports and also from the Baltic.

6623. The Baltic and the Black Sea, I suppose?—The Baltic and the Black Sea.

6624. (*Chairman.*) Thank you, Dr. Parker. Is there anything else you would like to say? There is one ques-

tion I wanted to ask you: what about wool; sheepskins?—Well, sir, wool is safe enough provided it is clean; if it has not got the dried blood. It is only in that dried blood, I understand. I do not profess to be an expert on this—but from what reading I have been able to do and all the evidence I have gathered, the only disease that can be brought by wool is on the dried particles of blood which adhere to the wool, the dried encrustations of blood. Now, this process of formic acid and mercury is absolutely harmless to the wool.

6625. It is, is it?—It is absolutely harmless to the wool. The only thing it will have a slight effect on is known as the wool-fat. As you know, Lanoline and various other things are got from the scouring of wool. The acid will have the effect of diminishing the yield of wool-fat from the wool. I think that perhaps might please the wool-scourers that they had less work to do.

6626. Is there anything else you would like to tell the Committee before you conclude your evidence?—There is only one point. I listened to the last witness, Mr. Matthews, and he said that he thought it would be a great danger to have an Experimental Station in this country. I totally disagree with that, because being head of an Experimental Station myself, and knowing a good deal about the Foreign Experimental Stations, when you carry out experiments at an Experimental Station you have a staff there who take every precaution. You have experts or should have, and, therefore, why should disease get out of that; they ought to take every precaution against it.

6627. But, surely if you are going to have an Experimental Station for foot-and-mouth disease in this country every other country in the world would say, "you have got foot-and-mouth disease," and they would be closed to us. We should be maintaining a disease centre?—Why should you fear if you take precautions. If you had an Experimental Station for foot-and-mouth disease, it would undoubtedly be closed in.

6628. (*Mr. Morrison.*) They tried that in Germany and it is stated that the disease escaped?—I am afraid that is a point outside my knowledge, but it did appear to me closing the door to the only chance of gaining some knowledge.

6629. (*Mr. Richardson Carr.*) We could not take more precautions in the Experimental Station than we do when we have an outbreak?—True.

And when we have an outbreak and take all the precautions, every foreign country in the world is closed to us. We should be better off with an outbreak than we should with an Experimental Station. Have an Experimental Station in India, but do not have it in the British Isles.

6630. (*Chairman.*) One more question: Would it be practicable to separate bloody fleeces from other sheepskins in importing?—It would be practicable but difficult; it could be done.

6631. (*Sir Bowen Bowen-Jones.*) Would the prohibition of any bloody fleeces be a practicable suggestion to make; prohibition, except under disinfection?—Yes. You could do it that way, but if you imagine, sir, that in a collecting station where they collect those fleeces coming by rail, by camel, by every possible means down to a collector, he gets these into his hide warehouse or depot. They come in by the hundreds and they are sorted into sizes and breeds. He has to teach his men to pick out those which are bloody.

6632. He has to handle every fleece; therefore he can see if there is blood on it, to put it into the "bloody classification" instead of the larger or smaller classification?—True, it could be done. I have watched them sorting. In Smyrna last year I went into a large warehouse where they collect these Smyrnan sheepskins and I saw them sorting them there for sizes. I said to the Manager, "Do you ever get deaths from anthrax." He said "Oh, quite often." "Are there any records kept?" "No, no records at all, it is a common thing."

6633. (*Chairman.*) Thank you, Dr. Parker, very much.—Thank you.

The Witness withdrew.

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[Continued.]

Wednesday, 27th March 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (*Chairman*), presiding.

Sir HARRY VERNEY, Bart., M.P.

Sir J. BOWEN BOWEN-JONES, Bart.

Mr. CHARLES BATHURST, M.P.

Mr. RICHARDSON CARR.

Mr. E. E. MORRISON.

Mr. E. M. NUNNELEY.

Mr. W. H. F. LANDON (*Secretary*).

Professor Dr. B. BANG, of Copenhagen, Chief Veterinary Adviser to the Danish Government, called in and examined.

6634. (*Chairman.*) Dr. Bang, on behalf of the Committee, I beg to thank you very much for coming over to give us your assistance on this question. You know what our Reference is, our Reference is to inquire into the circumstances of the recent outbreaks of foot-and-mouth disease in Great Britain, and to consider whether any further measures can be adopted to prevent their recurrence. That is the Reference to our Committee?—Yes.

6635. As you know, we have pretty stringent regulations in this country, and we are a little exercised in our minds that last year we had a certain amount of outbreaks, and therefore this Committee has been appointed to inquire into those cases, and we want to see if we can find out the causes for those outbreaks, notwithstanding the very stringent regulations which we have. I think you are the chief veterinary adviser to the Danish Government?—Yes.

6636. And you have held that position, I understand, since 1891?—Yes.

6637. And you have held other different offices, you are Doctor of Medicine, and Professor of Internal Diseases of Animals at the Royal Veterinary and Agricultural College at Copenhagen?—Yes.

6638. And you are a member of the Royal Academy of the Sciences of Denmark and of several British Veterinary Societies?—Yes.

6639. And I am also glad to see that you are an honorary member of the Royal Agricultural Society of England?—I am.

6640. Would you mind first informing the Committee what official veterinary organisation there is in Denmark for dealing with these outbreaks?—Well, the circumstances in Denmark are a little peculiar in that respect, because in Denmark all veterinary surgeons are officials in a certain meaning. When they meet a case of any infectious disease they are obliged to act according to our laws, and to take care of it, and to notify it to the police-master, and to order the first isolation, and to take such precautions as have to be taken immediately, and then the police-master has to apply the further Regulations according to the proposition of the veterinary surgeons; but we have no special veterinary inspectors, as you have here, for instance. I am the only officer under the Government who has to supervise the whole, but I have some assistants to help me.

6641. Have you a central organisation in Denmark?—Yes, we have; in my person, I may say.

6642. But have you a Board of Agriculture, like we have in this country; a department?—Yes, a Ministry.

6643. A Ministry of Agriculture?—Yes.

6644. You are its Chief Veterinary Officer?—I am immediately under the Board of Agriculture.

6645. You are really in the same position in Denmark as Mr. Stockman is in this country?—Yes, I think it will be almost the same.

6646. You have a central organisation, which is the Ministry of Agriculture in Denmark, exactly the same as we have here?—Yes.

6647. To what extent does the central organisation take part in the actual suppression of disease?—For instance, if there is a fresh outbreak of foot-and-mouth disease, as a rule I go myself to see it, or I send some of my assistants; and we take care of it in the beginning; that is if it is a case of a fresh outbreak. But if the disease has spread over part of the country, of course we cannot supervise all the cases, and the management is left to the police-master and the veterinary surgeons.

6648. Do you have in Denmark local authorities in different parts of the country, who have veterinary inspectors under them?—I do not think that corresponds exactly to what you have here, but I think that our police-masters are our local authorities. Of course, we have also in the towns special local authorities for the towns or cities, but for the country it is mostly the police master who has to do with these matters.

6649. But my point is this, that when an outbreak takes place in the country a long way off the headquarters, first of all, are the farmers compelled to notify that disease?—Yes, they are obliged according to the law.

6650. Then, to whom do they notify that outbreak of disease?—Usually they notify it to the veterinary surgeon, but if they would not do that, they could notify it to the police at the place.

6651. Do the police or the veterinary surgeon report to you at Copenhagen?—Yes, in cases of fresh outbreaks of foot-and-mouth disease they are obliged to telegraph immediately; other diseases not.

6652. I am talking of foot-and-mouth disease?—Yes.

6653. When they have reported to you you either go down or send one of your assistants?—Yes, if it is a new case, if, for instance, the disease has not been in the country for a year. When, such as is the case at present, we have many outbreaks in Denmark, then we do not go down to manage it ourselves. Then the Regulations apply which are issued under our law, and our instructions are followed by the veterinary surgeons and by the police-master of the place. They report later on to the Government. The reports come in to us, but not immediately.

6654. Then, as a matter of fact, you or your assistants never go down unless there is a fresh outbreak in the country?—Or if there is any special cause.

6655. In other cases where there have been outbreaks, and they go on, do the local authorities or the veterinary surgeon of the local authority manage the disease then?—Yes.

6656. And he reports to you?—Yes.

6657. But I take it that reports are immediately sent to the central authority of all outbreaks of foot-and-mouth disease?—Yes.

6658. And all owners and others are all bound by law to report any cases?—Yes.

6659. Can you give the Committee any information, founded on your observations, how long the virus of foot-and-mouth disease may retain its activity outside the bodies of animals?—My experience seems to demonstrate that the virus may sometimes keep its virulence for a year.

6660. For a year?—Yes, because, as you will see in my report, I have had four or five cases where the disease reappeared on a farm, in one case after half a year, in four cases after one year, and on one farm it even came again a third time. The first time it was on this farm in the year 1893, and then it reappeared a year later, in 1894, and then it reappeared again in 1895, although we killed the second time all fresh animals, that is all animals which were brought to the farm, or which were born on the farm after the first outbreak. I left the old animals alive, as they had obtained immunity after the first outbreak, but all the newly purchased and newly born animals I killed, but, nevertheless, the disease came again in a year's time, that is two years after the first outbreak. In the other cases it only reappeared once on each farm, in one case after half a year, in two

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cases after a year's interval. At the time of these reappearances there was no foot-and-mouth disease on any other farms in the whole kingdom of Denmark. The disease was only found at these four places, and that cannot very well be explained in any other way than by supposing that there must have been some virulent germs on the farms, or that the virulence must have been kept for a year.

6661. Do I understand you to say that in these outbreaks on these particular farms, in those four years, that all animals were slaughtered, both those diseased and those in contact?—Yes, all which had not got immunity from the first outbreak. At the first outbreak we did not kill, that is the first year. When the disease reappeared, then I did not kill the animals which had had the disease the year before. I only killed the animals which had not had the disease before, that is to say, the animals born on the farm after the first outbreak, and the animals brought into the farm after that outbreak. These were liable to get the disease; some of them were actually diseased, and others, although not affected, might get the disease. I had them all killed, because we would not have the disease in Denmark; but, nevertheless, on one of those farms it reappeared the year after.

6662. Then really, from your observations, you are of opinion that this virus may last 12 months?—Yes.

6663. Would you say it could last longer than 12 months?—Perhaps, I do not know. As a rule it is not believed that virus will keep such a long time. But my experience proves that it does keep as long in some cases. Happily it is only in rare cases, but it may happen.

6664. You mean it may remain where the virus is not exposed to the air, or to the sun?—Yes.

6665. In some closed yard?—Yes.

6666. Or in some loft with hay in it?—Yes, perhaps in the stable.

6667. Of course, this is quite a new view which you have set before us to-day, because we have generally heard that the virus at the outside will not last longer than a month, but that is not your observation?—No, that cannot any longer be considered true.

6668. We had some sort of an idea of this, because Sir John McFadyean gave us evidence, and he was mentioning your observations?—Yes.

6669. Then, I may take it that you say that, in your opinion, the virus may last 12 months?—Yes, but I do not mean that this is common.

6670. Oh, no, we quite understand that. When an outbreak takes place on a farm, do your Regulations impose any embargo on the removal of certain articles from that place? Do you put an embargo on things which are on the farm when there is an outbreak?—We do not allow animals to be taken away from the farm, they must remain there, nor hay or straw as long as the disease exists, and if hay or straw has been exposed to contagion, if it has been in the roof over the stable, it may not be sold afterwards, it must be used on the farm itself.

6671. Then, nothing is allowed off the farm where disease exists?—No.

6672. When foot-and-mouth disease exists in foreign countries, in countries bordering on to Denmark, do you forbid or regulate the importation of any articles of commerce which may carry the virus?—We have for many years had a prohibition against the importation of cattle. On the whole we do not allow the importation of cattle to Denmark from most countries. It is only allowed from Sweden and from Norway, and also from the Channel Islands, Jersey, for instance, we import some Jersey cattle, but otherwise we do not import cattle. It is not allowed to import cattle to Denmark from England, for instance, nor from Germany. Only in some very rare cases we allow under special circumstances the importation of a single animal for breeding purposes, but generally it is not allowed. But manufactured and other goods we import from other countries, of course. These often come with packing such as straw and such things. We do not prohibit the importation of such packing materials.

6673. You do not prohibit the importation of hay or

straw?—Well, we never import them for feeding purposes, except it might be from Sweden, but only with other goods.

6674. (*Mr. Richardson Carr.*) For packing?—For packing. Denmark, you know, exports hay and straw. We hardly ever import them; we produce more than we are able to use.

6675. (*Chairman.*) Do you prohibit importation?—From most countries it is forbidden to import live animals and raw products of animals, milk, hay, and straw.

6676. Milk you prohibit?—Yes, milk we prohibit, from most countries, that is, from all countries except Sweden and Norway.

6677. Milk is prohibited?—It is prohibited, yes.

6678. Hay, straw, and milk?—Yes, it is prohibited except from Sweden and Norway.

6679. Now, about hides, do you prohibit them?—Yes, if they are not dried. When they are dried or salted they are not prohibited. Of course, we import a good deal of hides from South Africa, for instance, and from South America.

6680. This is rather an important point about hides?—Yes.

6681. Is it your opinion that dried hides are a great source of danger as regards foot-and-mouth disease and anthrax?—Anthrax perhaps, but I do not think that dry hides will be a common carrier of foot-and-mouth disease. Of course, if they are fresh, they might be, but if they come from foreign countries, from far away, I think there is no danger.

6682. Hides coming in from infected countries with foot-and-mouth disease and anthrax. Would you not consider them a source of danger to come into a country?—Yes, there would be a certain danger, I certainly think so.

6683. But feeling that, as you do, I understand you do not prohibit the importation of hides into Denmark?—Not if they are completely dried, or strongly salted. If they are not, then they are prohibited, but if they are dried and strongly salted they are admitted.

6684. Salting hides is not a disinfectant, is it? It is only a preservative?—Yes, I think it is also a little disinfecting, but you know such hides do not come in contact with cattle, they come to the manufacturer, they come to the tanner; they will not come into the country.

6685. Do you import a great amount of hides into Denmark?—Oh, I think we do.

6686. You have a certain amount of disease in Denmark?—Yes.

6687. You are not of opinion that it comes from that kind of import?—No, because you see our fresh outbreaks of disease always occur in the country, on isolated farms, far away from tanneries or towns, so there seems to be not the least connection with the hides. But, on the other hand, I would not deny the possibility of a certain amount of danger. If you kept cows at such a tannery, or very close to it, it might be that the germs could be transmitted to these cows, but I think, as a practical question, at least in my country, the question of hides is of little importance.

6688. You say they do not go into the country; they go to the tan-yards?—Yes.

6689. But those hides have to be carted to these tan-yards by means of railway trucks or lorries, and is there not some fear of danger of the dust out of the dry hides?—In Denmark they mostly come on ships to the towns.

6690. And landed on the quays?—Yes, there is a possibility, of course.

6691. You have kindly given us a map, and what I gather from you is, that where your disease comes in chiefly, is from Germany?—Yes.

6692. From this map and chart which you have very kindly made out for us, I suppose there is no doubt that Germany is really responsible for the introduction of disease?—Yes, because you will see that all fresh outbreaks, or almost all, with very few exceptions, occur in the southern part of the country, close to Germany. And you will also see that in those years when the disease was very common in Germany it is also imported

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into Denmark, and if it is rare in Germany it does not come to us.

6693. Have they got good Regulations in Germany?—Oh, I think they have.

6694. Are they carried out well?—Oh, I think so; but nevertheless the disease has been for many, many years in Germany, continuously for 20 years or more, 30 perhaps.

6695. I take it the Regulations are good, but the administration is not quite so good?—I cannot say anything about that.

6696. Anyhow, you are the sufferer, are you not; your country suffers?—Yes, because we are a neighbour, but you see in Germany it is very difficult; because Germany has a large frontier to Russia and to Austria, and especially in Russia they have always foot-and-mouth disease; there is no doubt Germany gets the disease continuously from Russia, either direct or through Austria; and it is very difficult to take care of such a large frontier.

6697. (*Mr. Bathurst, M.P.*) You tell us that, in your opinion, the virus of the disease may retain its vitality for a year or upwards?—Yes.

6698. How do you think that the vitality of the virus is being retained all that time, in animals or outside animals?—I think outside animals. Of course, it may be possible that it could be in animals. You know, that about many diseases we know to-day, that the virus may remain in the apparently healthy animal or man; it applies, for instance, to typhoid fever and such things. You might say, therefore, that when the foot-and-mouth disease reappears on a farm it might be explained in this way, that some of the living animals continue to discharge something containing the virus. But, I mean that this is not probable, I do not think this is the true explanation, because you see in all my cases where the disease reappeared, I killed only the new animals which had not been exposed, but I left alive the old animals who had had the disease; and if there remained among them some carriers of such an occult disease, the probability is that the disease would have been continued on the farm.

6699. That is just what I intended to ask you. Your opinion would be, then, that an animal may itself recover apparently from the disease and yet will possibly communicate it to others?—I will not deny the possibility, but I do not think that that is the true explanation of the reappearance. I believe that the germ has continued to exist outside the body, that is, in some part of the manure, for instance, or in some such article which remained on the farm.

6700. In what articles on the farm do you think that the disease can remain when no animals are suffering from it?—I think particularly of the manure, because I have seen cases where the manure has been brought out to the fields three months after an outbreak of the disease, and has evidently spread the disease to other farms, which proves that the germs may live in the manure for three months at least. Now, in the few cases where the disease reappeared after a year, I think it probable that the virus has survived in some small particles of manure on the farm, somewhere, I do not know where.

6701. How long do you think that the germs of the disease could remain alive in manure?—In the manure I am sure they can remain alive at least three months.

6702. Probably not more than three months?—Perhaps more; probably more.

6703. You admit, I think, that heat and light and air have the effect of destroying the germs of the disease?—Yes; but as to how long a time that will take I do not know; nobody knows exactly. I have no doubt it is especially when kept in dark rooms, and not heated sufficiently, then the germs may remain active.

6704. Where manure is heaped together there is a considerable heating going on?—That differs very much. If it is mixed with manure from horses, for instance, it takes more heat than if it is manure from cattle alone.

6705. But the process of decomposition would, through engendering heat, probably kill the germs of the disease, would it not?—Yes, if it produces heat; heat enough.

6706. But heat is always produced by the decomposition of green manure, fresh manure, is it not?—Yes,

but I think it is very different according to whether the manure is mixed with straw and various other things. I am not a specialist in that subject, but I believe that farmers know that it differs very much.

6707. Than probably when you spread the manure out upon the fields, the action of the sun, or at any rate of the air, would tend to kill the germ of the disease?—Yes, but the sun cannot get very deep into the manure. If it is in a very thin layer it might, but it is not always a thin layer.

6708. You consider that manure is probably the chief means of retaining the germ of the disease?—Yes, I think so.

6709. When you have got rid of foot-and-mouth disease in Denmark, what, in your opinion, is the main reason for its reappearance in your country; to what source would you attribute it?—I think that in all cases the disease has been imported to us from Germany. If the disease is very common in Germany then in one way or another the germs come to Denmark, but as you will see on my map it is almost always in the southern parts, rather close to or not very far from the coast. When I find that the outbreaks occur on absolutely isolated small farms where there have been no persons coming from Germany, no cattle, of course, nor any other things coming from Germany, when I consider that they occur always in the southern parts of the country, then I think there must exist a natural explanation of this fact, and I am led to suppose that it may be birds which are the carriers of the germ. I think that such birds as seagulls or crows or rooks, and perhaps others, such as sparrows, may settle on manure on an infected farm in the north of Germany and then cross over the sea to the Danish coast and then settle there, carrying the manure on their feet to the grass or the roots, which are taken into the stables to feed the cows.

6710. And the birds would be, in your opinion, only carriers of the disease, not sufferers?—Only carriers, not sufferers; I have never heard of them being sufferers. I think they may be carriers either in this way that the contaminating matter sticks to their feet, or perhaps they may eat something contagious, and then pass it through their intestines; this may be possible. I do not know anything definite about it.

6711. What about fowls, poultry; do you think that poultry are likely to communicate the disease either as carriers or sufferers from it?—It has been said that poultry may suffer from the disease; I never saw it. It is always mentioned in the text books, but I never saw it. But I think poultry can easily be carriers, having the germs outside their bodies.

6712. Do you think that wind carries the disease?—Yes, I think it is not impossible, because such small particles could easily be moved with the wind, and when we speak of the wind perhaps it may mean some insects which are carried with the wind, or such small particles of any kind which are transported with the wind. We have some cases in Denmark where it seems that the disease has spread in the direction which the wind had.

6713. You have had evidence of that?—We have had such cases. Of course that can never be proved; it is only an impression that you get.

6714. Then, if I understand you aright, you think that the chief source of the disease from outside your country is carried by birds?—I suppose it is.

6715. You think so?—I think that there must be some natural circumstances, some movement in nature.

6716. And you also suppose that the main source of the spread of the disease in your country, when you have got it, is probably manure?—Yes, I will not say the main, but it is one of the chief things. When we have the disease in the country there are so many different ways in which it may be spread. Personal communication, for instance, is very dangerous. If one person from a farm goes to another farm, or if a cattle dealer comes to a stable and goes from that stable to another stable.

6717. You take steps, I suppose, for disinfecting persons who have been in contact with the disease?—Yes, if we know it, but in many cases we do not know that such a person has been there.

6718. Have you ever suspected hay and straw used for packing goods as a source of the disease?—No, we

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have not seen such cases; there might be, but I do not know of any such cases.

6719. You do not think it is a likely source?—No, I do not think so.

6720. Do you get many goods from Germany, merchandise from Germany?—Oh, yes, quite a lot of manufactures.

6721. And how about feeding cakes, linseed cake, and cotton cake, and similar cakes?—Yes, we import a great quantity of it from all countries. You understand that many persons in Denmark believe that the disease may come with such cakes, but I do not think so, because these cakes are spread over the whole country; they come as well to the northern part of the country as to the southern part, and if the cake was a common carrier for the disease, it could not be explained why the fresh outbreaks are always in the southern part. It cannot be explained in that way. But in one case, where a fresh outbreak occurred in the northern part of Jutland, I believe that perhaps cakes or other feeding stuff may have imported the disease in a railway car which had not been sufficiently disinfected. That may have happened. It is a very difficult thing to disinfect railway cars, you know. For instance, in Germany I know that they are ordered to disinfect them very carefully, but they say themselves they do not always do it. And it is the same case in Denmark; our orders are very stringent, but the work is not always sufficiently supervised. It is a very difficult thing with such railway cars going all over the country.

6722. There is, in fact, an Order both in Denmark and Germany for the disinfection of railway trucks, is there?—Oh, a very strict Order, but there are so many different stations and so many different people to do it, that it is not always carried out in a sufficiently good way, and, therefore, there is always a little danger with such things.

6723. Can you say what they use as a disinfectant?—We use lime, and also sapocarbol, and things of that nature.

6724. You have been, in Denmark, exceptionally successful in getting foot-and-mouth disease out of the country, when it has been prevalent on other parts of the Continent, I think?—Yes, we have been very successful until last year.

6725. Until last year?—Yes, now we are not so well off. Of course, it is not so bad, but it has spread more than we like.

6726. And if I may ask you, what do you consider is the main reason why you have been in Denmark so eminently successful in keeping this disease out of your country, although you have got a long land frontier?—We have not such a very long land frontier, you see. Usually the disease has not been so very common in Schleswig-Holstein; but last year it was very common there; formerly it was not so common there as in other parts of Northern Germany. But I think the chief explanation why we have been comparatively exempt, may be found in the fact that we have a very great number of veterinary surgeons in the country, and they are used very much. The farmer is accustomed to call the veterinary surgeon if there is anything wrong with his cattle, and therefore we very soon detect the disease. If the farmers were not in the habit of calling the veterinary surgeon in all cases of disease, it might happen that some weeks passed before we found the disease, and that is a very essential thing, to detect the disease very soon, to find the first case before it spreads.

6727. Do your farmers, as a rule, give notice of the disease as soon as they get it?—Yes.

6728. There is no attempt to conceal the disease?—No.

6729. From the Government authorities?—At least very little. I know a few cases where a man has been a little careless for some days perhaps, but it is not common. Mostly they fear the disease very greatly, and they call the veterinary surgeon at once if there is any suspicion. They call him, of course, in many cases where the suspicion proves unfounded, but they think that it might be the disease. That, I think, is a good explanation of our good results, that the farmers

are accustomed to call in the veterinary surgeons very soon.

6730. I think there are very friendly relations between you and your Department on the one hand, and your farmers on the other?—Yes, there are.

6731. You are in full sympathy the one with the other?—Oh, yes.

6732. Then, if I understand aright, you will consider the comparatively small short land frontier as one of the reasons why you are so successful?—Yes, our circumstances resemble those of England in some respects. A large part of our country consists of islands which are isolated, but not so far isolated as England is, and then we have the short frontier through Schleswig-Holstein.

6733. And the other main reason, if I understand rightly, would probably be the sympathy which exists, and the co-operation which exists, between the farmers on the one hand and your Department on the other?—Yes.

6734. May I ask you what is your experience as to the kinds of animals which suffer from this disease besides cattle and sheep?—And swine.

6735. And swine?—And goats sometimes, but we have not many goats.

6736. Do you think horses suffer from the disease?—No.

6737. You do not?—No, I never saw it.

6738. Do you think human beings suffer from the disease?—Oh yes, sometimes.

6739. Have you seen it in human beings?—I have not personally seen it, but I know such cases have been observed, but it is rare.

6740. Are you conducting any research, any experimental or scientific research, in Denmark, into the nature and origin of the disease?—No, they do not dare do that, it is too dangerous.

6741. You have already answered, I am afraid, the question I was about to put to you as to whether you think it is safe in any country to carry on experimental research, at a Research Station, in connection with this disease?—That is a very dangerous thing. You see in Germany they do that, but they have been obliged to have their experiments on an isolated little island, because it is said the renowned Professor Loeffler, who had a Research Station in Germany not very far from Greifswald, once spread the disease from that place.

6742. He spread the disease from that place?—Yes, it has been said.

6743. And it had to be given up in consequence?—Then, he put his farm on an isolated island to keep it more separated from the surroundings.

6744. How far is the Island from the mainland?—I do not know, I have never seen it, but I know the experimental station is on an island.

6745. Do you think that the disease is now ever spread from the Island?—No, I do not think so. I have not seen it personally, but I was told some years ago that the disease spread from the Experimental Farm, so that proves that it is very dangerous.

6746. Do you consider that there is anything to be gained by research and experiment in connection with this disease?—Oh, yes, that is probable, but it may take some years, perhaps many years. You know Professor Loeffler has worked for many years with the disease, and he has found many things. We know to-day that the germ is a very little one, so small that we cannot see it with the microscope, and that it can pass through the filter. He has been able to produce immunity in cattle and swine, etc., but it is of no practical use as yet, because it will cost too much. He has not been able to cultivate the germ outside cattle, in glasses, so that he could produce the vaccine in large quantities; he can only produce it in the living animal, and, therefore, as yet, it is of no practical value, but perhaps it will come.

6747. Is Herr Loeffler doing more advanced work in this connection than anyone in Europe, in your opinion?—Oh, yes, I think he is.

6748. Does he conduct this work with the help of Government money?—Yes, a large amount of money. The German Government has given much money for this purpose.

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6749. Is it Herr Loeffler who has discovered a filter which will intercept the germs of this disease?—No, he has proved that the filter cannot intercept the germ, it is so small that it passes the filter.

6750. Yes, but someone, I think, has discovered a filter which will intercept, stop the disease?—I do not remember that exactly.

6751. The only other thing I am going to ask you is, considering the ignorance from which we all suffer in every country as to the nature and means of conveyance of this disease, you would advocate more co-operation between the Agricultural Departments of different countries with the view to stamping it out?—Yes, that would be good. Of course, it is always good to co-operate.

6752. Do you see any way in which Denmark can co-operate with England in this matter?—I do not know exactly how that should be done. It largely turns on political questions, the imports and exports of cattle and such things.

6753. I do not know if the Chairman asked you, but yours is a great milk-producing country. Do you consider that milk is a possible means for conveying the disease?—Oh, yes, it is. You see, in Denmark we have such a great number of co-operative dairies, and so on. Most Danish milk is sent to the co-operative dairies, and we have sometimes found that the disease has spread from an infected farm to other farms, which received skimmed milk from such a dairy; but happily in Denmark all skimmed milk, and all butter-milk, is always heated in the dairies, and therefore this source of spreading to-day is not so dangerous as it was before, but nevertheless we do not allow a farm where they have the disease to send any milk to a dairy, unless the milk is heated first on the farm before it goes to the dairy.

6754. Sufficient to sterilise the milk?—Yes, sufficient to sterilise the milk.

6755. Do you think that butter can carry the germs of the disease?—It might not be impossible; but it could not be so with Danish butter, because you know our Danish butter is always made from cream which has been heated sufficiently. I think, however, that this question is not very important, because butter is never given to animals, only to man.

6756. No, it is not given to animals, but it may be packed in substances which do find their way on to the farm. However, I do not want to press that. There is nothing, I think, in the process of butter-making which would necessarily kill the germ?—I do not think that there would be, on the whole, much risk in that direction. If the cream is heated, there could be no risk; heat is the best means of disinfection, therefore we require all our butter made from cream that has been heated.

6757. (Chairman.) There are a few more questions I would like to go on with. First of all, I should like to know a little more about this question of manure?—Yes.

6758. You have told us about outbreaks in those four different places?—Yes.

6759. Have you any recollection now—perhaps it is rather a long time to ask you to remember—how long after the recovery of the animals on the first farm was the manure carted out off those yards, have you any recollection?—No, I do not know.

6760. Then, I also gather that you think this disease might have been brought about by carriage by crows?—Yes.

6761. Were there any circumstances to indicate why this disease was only carried to one farm by these crows; it was only on the one farm, I understand?—Oh, it is only an example. I think we have seen the same thing happen in other cases. I only mentioned a single case where it seemed to me to be so clear. We have here the disease on a small farm right out in the country, the animals are killed and buried, but the manure is left for three months in the yard; and then, after three months, it is spread on the field, and just on the day when the manure is spread there is a great number of rooks coming, sitting down on that manure, and on that same day a neighbour has opened his turnip heap to take turnips to his cattle, and he sees

that the rooks are sitting down on the turnips, and a few days later his cows have got the disease. It is at least very probable that the rooks have been the carriers, and that they have brought the germ from the manure.

6762. Then, as a matter of fact, it is a wonder, if that supposition is right, that it did not spread on to more farms, because these rooks, I presume, went all over the place?—Yes, but, of course, in this manure there might be germs only on a few places. It is not filled up with germs, otherwise it would be still more dangerous than it is; but some veterinary surgeons have told me of examples which resemble very much this case, and which they have seen in other parts of the country where there were cases of the disease. They have seen rooks or crows sitting and walking on such turnips some days before they were taken to the stable, and then the disease broke out. You cannot prove that this is actually the way in which it spreads, but I think it is very probable. We see very often when we have the disease in a little village that the disease appears, perhaps, some few English miles from that spot, when there has been no communication at all by people between the two places; it is very probable that it is the birds which convey the disease from one place to another. This constitutes a great danger, I think, and, therefore, we are to-day much more careful in our treatment of the manure. We cover it and let it remain for a long time before it is taken to the fields. Of course, it is a difficult question.

6763. Of course, in this country, you know, in many parts we cart the manure out of the yard and put it on a heap in the fields to heat and then turn it over?—Yes.

6764. Well, you do not suppose the virus of foot-and-mouth disease would last long in a heap of manure like that, would it?—I think, if you produce a good heat, then the virus will be destroyed.

6765. Anyhow, I think from what you said to Mr. Bathurst just now, you are of opinion, from your great experience, that there is still more to be found out about this question of foot-and-mouth disease. The latency of the virus, there is a good deal more?—Yes.

6766. And you think that in time we may find out something?—Yes.

6767. And, therefore, although I was very glad to hear you say that you did not approve of, and would not suggest, an Experimental Station in your own country any more than we should here, at all, at the same time I suppose you would welcome an International Experimental Station of all the countries like Germany, France, Denmark, and ourselves in some distant part of the world, would you not?—Yes.

6768. To take the whole question of this disease and other diseases into review?—Yes.

6769. You think that would be a good thing, do you not?—Oh, yes, I think it would.

6770. Well, one other question I want to ask you. Do you slaughter in Denmark in an outbreak of disease at once, or do you always isolate first of all?—No; as a rule we slaughter in the first cases, and we have done that with good results for many years. Also, this last time we began to slaughter, and we slaughtered perhaps ten or twelve—I do not remember exactly—herds on different farms, some of them not so small; but then, as the disease spread, nevertheless we could not continue; it would cost too much money. Similarly, for instance, in Sweden. In the south of Sweden they had some cases of foot-and-mouth disease recently; but, until now, they have killed all herds. They killed about ten herds off at least. A few days ago they killed a herd of about 200 head of cattle and 150 swine on one farm. They are more isolated than we are in Denmark, you know. Possibly they get the disease from us in Denmark. I do not know in what way, by persons or perhaps sea birds, but they have had some fresh outbreaks in the southern part of Sweden in the last half-year, and there they have killed all the herds attacked. And the same thing we have done in Denmark for years, only the cases have lately been too frequent to continue killing.

6771. When you have outbreaks, do you make large areas round the farm?—Yes.

6772. Do you make more than one area; do you take the farm as one area, and then another outer area,

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and another outer area beyond that?—In the beginning we had two areas, but now we have on the island only one area; but in Jutland, from where it is allowed to export live cattle for slaughter to Germany, we have two areas round the infected place.

6773. What kind of size are these areas; can you give the Committee any sort of idea what size it is?—Yes; it has at least a diameter of two kilometers.

6774. That is the first area; that is the farm area, I suppose, is it not?—Yes.

6775. Your outer area is a much bigger one, I suppose?—It is a little bigger; yes.

6776. When you have those areas, I suppose, you do not allow anything to be brought in or anything to be taken out?—We allow them to bring it in, but not to take it out.

6777. You do not allow any cattle to come in on to an infected place, do you?—Not to the farm, but to the area. We allow them to bring cattle in, but not to take it out; never to take out. For slaughtering purposes they can bring out some swine to the slaughter-house.

6778. (*Sir Bowen Bowen-Jones.*) It is quite a new view to us, after the evidence we have heard before this Committee, except from you, that the vitality of this germ can last so long?—Yes.

6779. And we are very much interested about that statement, and would like, if possible, to prove the accuracy of it; the truth of it?—Yes.

6780. In reference to your observations in the 1893 outbreak, where this recurrence occurred; did the disease break out on any other farms in addition to these four farms where you say it recurred?—No.

6781. That is from November 16, 1892, to November 20, 1893?—Yes.

6782. Did it occur on any other?—Only on the four farms; only on those four.

6783. No disease broke out in any other part of the country?—No, we had no disease at that time. In the winter of 1892 to the next summer of 1893, we had the disease in Denmark, but only on about 400 farms; not more than 400 farms; and out of these 400 farms, or exactly 398 farms, the disease reappeared only on four farms.

6784. And in no other farms in the country?—No other farms, no.

6785. The cattle that had had the disease on these farms, you say, remained on the farms?—Yes.

6786. Did any cattle that had not had the disease during the time of the first outbreak also remain on the farms?—No, I killed them; I had them killed.

6787. You killed all except those that had the disease?—All that had had the disease before.

6788. But my question is: Did you leave any alive that had not had the disease during that outbreak?—No, I am not sure that I understand exactly.

6789. It is difficult, if we do not understand one another. All the cattle on the farm that had the disease in 1892 on that one farm were left?—Yes.

6790. Were there any other living cattle on the farms that had not had the disease left on those farms in 1892?—You see, in 1892 all the cattle on the farm were diseased; then, a year later, there were on the farm most of the animals which lived in 1892, but some new cattle had come; there were born some calves, and the man had purchased and brought in some cattle from other places.

6791. Do not trouble to go into that; I know that?—You do.

6792. The point is this: Did any of these cattle that you say had the disease possibly not have the disease at that time; did they have it in such a mild form that you did not notice it?—No, I do not think so. My results were, that all the cattle which had had the disease the first year did not have the disease the next year; they were immune. Cattle which had been diseased in 1892 did not get the disease again in 1893.

6793. Is it possible that some of these cattle that you thought had the disease in 1892 did not have the disease?—In 1892.

6794. In 1892?—No.

6795. (*Mr. Stockman.*) I think the question is this: Were you quite convinced that every animal on the place in 1892 had the disease, or are you prepared to

say that some of them might not have had the disease? As I understand, your answer is: that none of the cattle that were on the farm in 1892 took the disease in the next outbreak, therefore you concluded they all had the disease in 1892, and were, therefore, immune; is that correct?—Yes; that is what I think. I had not been on the farm the first time; I did not see the cattle the first time, therefore I cannot say exactly if all were affected; but I think they were. In most farms all are affected. The next year I left them alive, because I thought they had immunity, and the result proved that I was right, because they did not get the disease; they had had the disease the year before, no doubt.

6796. (*Sir Bowen Bowen-Jones.*) Now, I want to ask you this question: supposing some of these cattle that were left alive had not had the disease in the first instance, could they not have carried it on by having taken it in a very mild form; could they not have carried it on and given it to the fresh animals that were brought on to the farm before November 1893?—It might be possible, but there is nothing that speaks for it. I cannot deny the possibility.

6797. You see, what I want to get at is to prove the truth—I do not mean the truth in the way you say, but accuracy we should call it here—to prove the accuracy of your opinion about the length of the vitality of this germ?—Yes.

6798. Well, we go on to another question; why should not the disease have been re-imported on to these farms, as it was imported in the first instance?—I think it is not probable, because why should it be imported only to the farm where it has been before; it would be very peculiar. Of course I cannot deny the possibility that it could be a fresh outbreak imported from Germany the next time, but it would be very curious if such an outbreak only came to farms where the disease had been the year before and not to any other farm.

6799. But it might have been what we call a coincidence?—Yes, it might be; I cannot deny the possibility.

6800. Then you say, in this interesting Report of yours, that fodder was imported to all these farms?—Yes, cakes.

6801. Cakes; could it not have been re-imported on to these farms?—Yes, of course it could, but I think it is improbable.

6802. But still, that was a source of danger?—Yes.

6803. Is it probable that these four farms were more likely to have been infected from such sources as that, from their position or from the amount of feeding that farmers carried on, on those farms?—No.

6804. There was no great difference in the management between these farms and other farms?—No.

6805. Were they the first farms to have it in the previous outbreak?—No.

6806. You did not personally attend there?—Not the first time; only the second outbreaks.

6807. You did not personally attend, and therefore you cannot vouch for yourself that every animal on the holding was suffering from foot-and-mouth disease?—No.

6808. You have been asked a great many questions about further research. That was one thing that occurred to me as being absolutely necessary on account more particularly of what you have told us about the length of time these germs existed. You have been asked questions about that, and you think it would be a good thing, I am glad to hear, to investigate the life history of this germ to a greater extent?—Yes.

6809. The Chairman has suggested a method of doing that with which you agree, that if different nations could jointly undertake an investigation it would remove any jealousy from one having taken it in hand or prevent any restrictions being put against that country; is that your opinion?—Oh, yes.

6810. I may point out to you that your evidence about the length of duration of the life of the germ is negative evidence; you admit that? What we call negative evidence is evidence that is not direct. It is indirect evidence?—Yes.

6811. Might I ask you why you decline to import cattle from England into Denmark?—It is from old time when you had more diseases than you have now, and Denmark has always intended to be as free as possible

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from disease, and therefore it is the safest way not to import cattle from other countries. Of course, we import a very few shorthorn cattle from England because we have crossed shorthorn cattle in some part of Jutland; besides that we import only a certain number of Jersey cattle, because in the last ten years we have gone in more and more for Jersey cattle in Denmark; otherwise we have no special reason to import cattle from other countries. We have very good cattle in Denmark.

6812. But I hope you give us credit and recognise that England is now a country that is very free from cattle disease?—Oh, yes, except sometimes a little foot-and-mouth disease.

6813. And also that we have a Department in England that is prompt to suppress any outbreak of disease?—Oh, yes, indeed.

6814. With reference to the hides, you seem to attach very little importance to infection being brought in from their importation?—We know so little of it, but I think perhaps anthrax may be sometimes imported with hides.

6815. Now, take hides from Russia coming to you. Surely the germ of foot-and-mouth disease would last in a hide while it was being brought from that country to yours?—Yes. I do not know if we import many hides from Russia. I know too little about that. I think we take more hides from other foreign countries—from Africa and such places. I do not exactly know where they come from.

6816. May I suggest to you that it is a source of danger to import hides from a country that is so near you as Russia is?—Yes, there may be a certain danger.

6817. Allowing, as you do, that it is a source of danger, would it not be a good thing if we could stamp that source of danger out at the port of embarkation, before going into the ship, by the disinfection of the hides?—By the disinfection of the hides, yes, but if you import a great number of hides it is a difficult thing to have them disinfected.

6818. Well, I think that is a matter of organisation and arrangement?—Yes.

6819. If it is a source of danger, it would be a good thing to kill that source of danger at the port of embarkation?—Oh, yes.

6820. Then again, there are hides that have germs of anthrax and foot-and-mouth disease deposited upon them which may contaminate feeding-stuffs in transit?—Yes.

6821. And, therefore, that source of danger would also be obviated by disinfection?—Yes.

6822. (*Mr. Nunneley.*) With regard to the length of life of the virus, you say that you think it does live for a year?—Yes.

6823. Do you think that, under the most favourable conditions conceivable, it could live for much longer, say 10 or 20 years?—Oh, no.

6824. I have in my mind a case that I have heard of; I daresay other members have heard of it too, where it is known that, several years ago, a dairy-farm was infected, and the milk was taken into the dairy and spilt on the floor, which at that time was not in very good condition. Several years afterwards that floor was taken up, the rubbish was carted out into the yard, and within a week there was an outbreak of foot-and-mouth disease, the cattle having smelt the rubbish, and it was thought in that neighbourhood that it was owing to that; do you think it possible for it to last in that way?—Ten years?

6825. Ten years or more—20 years—under the bricks in the floor as it were, kept in the dark, cold, and damp, moist?—I do not know what to answer on that. It might be possible, but I think it very improbable.

6826. Then, with regard to manure. I think Sir Ailwyn mentioned that manure is carted out into heaps and rotted, but in our part of the country we frequently cart it out and, in order to prevent it rotting, we guard it by making it solid and hard, so that practically it will keep for a year with hardly any heat. You think in that case it would be a source of danger for a year or more?—If it is not heated, I think there would be a danger.

6827. If it were kept in the dark and practically in

a moist state and without heat, would you think there would be a danger?—Yes.

6828. Then, with regard to the dairy stuff; you say that in Denmark your butter is always made from scalded heated milk?—Yes.

6829. Is it done so on all the farms, or is it all taken to the factories where it is done so?—It is mostly done in the factories, but it is not allowed by our law to export butter from Denmark which has not been heated to 80 degrees centigrade.

6830. It is never allowed?—No, it is never allowed.

6831. And you think that law is carried out?—Oh, yes, I think so.

6832. Because, from reports which we have seen in some countries, butter has been made from the milk of cows actually suffering with foot-and-mouth disease?—Yes.

6833. Do you think that could happen in Denmark?—Oh yes, it might happen, but the milk would always be heated.

6834. Because, here we do not heat it; our cream is not heated?—It is a speciality for Denmark, this pasteurising of milk and cream.

6835. But, if milk is not heated, then there would be nothing to kill the germ, would there?—I am not sure whether it will always be killed. I think it might be killed, as a rule, but I do not know exactly about that question. I can only answer that this will not apply to Danish butter, because that is always made from heated milk.

6836. You were saying that the butter does not go to animals?—No.

6837. But you know there is a good deal of butter refuse in England from the big hotels and restaurants given to the pigs?—Yes.

6838. So unless the germ were killed there might be some danger?—Yes.

6839. As to the other point about the hides; you do sometimes have anthrax in Denmark, have you not?—Yes.

6840. How do you account for that, except from the hides?—We believe that the frequency of anthrax in Denmark is greater and greater year after year; we have not much, but we have more than we had 20 years ago, and we believe that it depends upon the very great import of feeding-stuffs. We take cakes from all parts of the world. We take barley from Russia, for instance, where they have very much anthrax in the southern part of Russia, and, therefore, I think we might get it that way, as the barley, for instance, could easily carry germs of anthrax with it. Here in England Sir John McFadyean has proved, some years ago, that such feeding-stuffs were infected with anthrax from hides coming from Asia Minor.

6841. Then you think that anthrax may be carried not infrequently by the feeding-stuffs?—Yes.

6842. But you do not think that foot-and-mouth disease would?—We know that the spores of anthrax are able to live 20 years, perhaps 30 years or much more.

6843. Five hundred years?—Such things we do not know of the germs of the foot-and-mouth disease. We usually believe that they live a very short time; they live a year perhaps, but with anthrax there is no doubt from what we know, that they may live a very, very long time.

6844. You believe that under the most favourable circumstances the virus of foot-and-mouth disease could live for several months?—Yes.

6845. Could it not live in the moist hides; I do not say in the dry hides, but in the moist hides; could it not live, at any rate, for some weeks?—Oh, it may be.

6846. In the dressing or salting of the moist hides there would be nothing to kill it?—There will not be sufficient.

6847. In the moist hides—a great many hides are brought to England we are told, in a moist state, wet; well, they are salted, are they not?—I think they are salted.

6848. That would not kill it, would it?—I am not quite sure, but I think it would help a good deal.

6849. (*Sir Harry Verney, M.P.*) Sir Bowen Bowen-Jones has only left me one question. I wanted to ask,

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with regard to the length of the life of the virus, if I may take a case mentioned in your evidence here when foot-and-mouth disease broke out in March 1893; well, apparently in was stamped out and broke out again in February 1894?—Yes.

6850. Can you say that that was the same outbreak which had laid dormant that time?—Yes.

6851. Then you go on to say that it broke out again in March 1895?—Yes.

6852. Again you think it was stamped out—lay dormant in that case 13 months—and then started again?—Yes.

6853. In that particular case, I do not find it marked on the map, where was the farm?—In Sealand.

6854. Where is that?—The same island where Copenhagen is. The reason it is not marked on the map is because we have marked only fresh outbreaks. On the map are only the new outbreaks, and this was not considered a new outbreak.

6855. I see all the other outbreaks in the district of the frontier—a good many later on—would, in your opinion, have been brought by birds, or passengers, or all sorts of things. There were a good many outbreaks in the same district?—I must tell you that the red numbers on the map have nothing to do with this question.

6856. The green?—The green numbers indicate the year when a fresh outbreak occurred in that part of the country where the number is written.

6857. (*Mr. Morrison.*) We have been considering what are the most likely sources of danger amongst our imports into England?—Yes.

6858. And one thing we have been considering has been the hay and straw used for packing?—Yes.

6859. We have had evidence that in Holland dung was taken out every year from the cattle courts and spread on meadows where hay was grown, and that hay was always used for packing purposes. Now do you think that the germ would survive in the dung of perhaps a month or two on the field, and then in the bales of hay, and so get over to England in a live state?—I do not think so; it is very improbable.

6860. You think that would be a very slight source of danger?—Yes.

6861. You think it would be a very slight source of danger, because the germ would die, I suppose, from exposure to the light and air?—Yes, and the sunshine.

6862. Do you think this hay or straw used for packing would be dangerous for any other reason; I mean from any other source, other than dung taken away from a steading where there was foot-and-mouth disease; it might be contaminated there and used for packing; do you think that a likely source of danger we could guard against?—I do not quite understand.

6863. If it is taken from a farm steading where the disease exists, and has been contaminated on that farm and afterwards used for packing, and so found its way to England, do you think that would be a likely source of danger?—It might be a source of danger, but I do not think it would be very serious.

6864. So that even if the germs were to survive for nearly a year, you think that packing straw is not a great source of danger to us in England?—No, I do not think it is.

6865. You mentioned that milk was used at the factories; even supposing that milk was taken from infected cows, I understand?—Yes, but it is not allowed to come to the factory unless it is heated on the farm before it is taken to the factory, and, of course, in many, many cases the milk is retained on the farm. It is very common that it is retained on the farm. Many, many factories will not receive milk from an affected farm. If they will take it at all, at least it must be heated first.

6866. Is there any Regulation prohibiting the sale of that milk in Denmark?—As fresh milk it is prohibited, it cannot be sold, it must always be heated. They are not allowed to sell raw milk from such a farm.

6867. If there was no disease, of course, it could be sold, but if there is disease it cannot be sold?—Yes.

6868. Is anthrax very prevalent at all in Denmark?—No; thirty years ago we had very, very little, but to-day we have perhaps 100 to 150 cases every year. I

do not remember the number exactly. The reason is, I think, the great importation of foreign feeding-stuffs.

6869. We are inclined also to blame feeding-stuffs for anthrax?—Yes.

6870. But, we rather fear that the infection may be got from the railway trucks or lorries, or perhaps from the ships where hides may have been carried?—Yes, it may be.

6871. But you seem to have a more complete system of disinfection than we have?—I hardly know.

6872. You disinfect, I understand, all railway wagons whether they have been carrying animals or goods?—No, if they have been carrying animals they are always disinfected, but not if they have carried goods.

6873. Supposing they have carried hides, do you disinfect?—Yes, I think they do; I cannot say exactly, but I think they do.

6874. You think, if these wagons were not disinfected after carrying hides, that would be quite a reasonable cause of danger?—Yes, I think it would; I think that disinfecting railway cars is a very severe question.

6875. You seem to do as we do, you disinfect after live animals, but not after goods?—No.

6876. We have had in evidence that horses and ponies can be taken from an infected country, such as Russia, over in a ship perhaps three or four days at sea, and then landed on our shores, the interval between their leaving an infected farm and their reaching a free farm in Britain being not more than a week. Do you think that would be a likely source of danger? Would those animals probably have any reasonable chance of carrying disease in that way, supposing they had been taken from an infected farm?—It might be a source, but I do not think it would be a great danger, because we import a great number of Russian ponies into Denmark, a very great number, and we have never found any indication that these animals have brought the disease to us. We import, I think, 6,000 to 12,000 ponies every year from Russia, and they are spread over the whole country, so I think, if they were the carriers of the germs, we must have found cases where it was probable that the disease came with such horses, and that we have never found.

6877. That seems very re-assuring evidence, because I suppose you take these ponies direct from Russia?—Yes.

6878. You will get them in a shorter time than we can get them?—Sometimes it is only four days, I think.

6879. Have you any law prohibiting private research into foot-and-mouth disease in Denmark—research apart from the Government? Could a man, for instance, experiment in serum or anything of that kind, inoculation, without being interfered with?—Private research on foot-and-mouth disease?

6880. Yes?—No. That would not be possible.

6881. The occasion has never arisen when you have had to deal with that?—No.

6882. Have you any knowledge then of the action of any serum to inoculate cattle with in connection with foot-and-mouth disease in Denmark?—No, we know nothing about serum except the Loeffler serum, and that has been tried in Germany with good results, but it cost too much, so that it will not pay to use that.

6883. Have you used it in Denmark at all?—No.

6884. But you agree that further research into foot-and-mouth disease must be carried out under Government supervision?—Oh, yes.

6885. Wherever it is carried out?—Yes.

6886. (*Mr. Richardson Carr.*) About the length of the life of the virus, you say you believe that it would live a year?—Yes.

6887. Of course, you have no direct proof of it exactly?—No.

6888. Therefore, not having any proof that it would live a year, there is no reason why it should not live a great deal longer, so far as we know? The evidence you have got to show that it lived a year was the outbreak in the cattle?—Yes.

6889. And, of course, that might have been the case or it might not, but of all the number of cases you have had in Denmark of this foot-and-mouth disease if it lived a year, it might have broken out in other places to

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where you had so many cases in times past?—Yes, but I think there must be some special circumstances to keep the germs alive. As a rule, I think, the germs will die before a year, but under certain happy circumstances—

6890. Yes, for the germ?—For the germ, it might be alive a year, or perhaps longer.

6891. And, therefore, there is no real evidence; there is nothing to show that it might not live two years or three years?—No.

6892. If the circumstances were happy for the germ?—Yes, it might be.

6893. There is no proof against it, is there?—No, there is no proof against it, and also no proof for it.

6894. Do you think it is possible that if it were buried in a wet ditch for five years, a cool wet ditch, it might live; you cannot tell?—I cannot tell.

6895. In fact, I may say as to the whole question of the length of the life of the virus, it is surmise really; there is no proof about it at all really?—No.

6896. You have no proof whatever?—No.

6897. As to the length of the life of the virus?—No.

6898. With regard to the hides, why do you think that the dry hides, if they came from an infected area, are not a source of danger?—I did not say that. I do not deny that there might be a danger, but we never saw evidence of it.

6899. But do you think they might be a source of danger?—They might be.

6900. If they came from an infected area?—Yes.

6901. If they were packed close together?—Oh, yes.

6902. But you think they are not so much a source of danger as fresh hides, of course?—Yes.

6903. Do you think they might contaminate feeding-stuffs, if they were packed in the same truck with them?—Yes, I think they might.

6904. I know you have a large number of cattle from Jersey, have you not?—Yes.

6905. Has it ever occurred to you why Jersey is so free from foot-and-mouth disease?—Yes, because they do not import cattle to Jersey.

6906. They do not import cattle?—No.

6907. Do they import hay or straw?—I believe they export.

6908. They do not import it?—No, I think they do not.

6909. You think that the lack of importing these various things may be the cause of their keeping so free?—No.

6910. I do not think they import hides?—No, I do not think so.

6911. I suppose you think that for a country that is free from disease it would be a very unwise thing to admit any foreign cattle from countries that have got foot-and-mouth disease?—Yes, absolutely.

6912. (Chairman.) There are two questions I should

just like to ask you. The first is in relation to a question which Mr. Morrison asked you, and which you have been asked before; that is, supposing the hides were disinfected at the port of embarkation there would be no necessity then, in your view, I suppose, to disinfect the holds of ships or the lorries or railway trucks, or that kind of thing, if they were properly disinfected at the port of embarkation?—For instance, in Russia you mean, if we take Russia; you mean they should be disinfected in Russia before they are taken on board the ship?

6913. There would be no occasion to go into the difficult matter of disinfecting railway trucks, lorries, or holds of ships, which would be still more difficult?—Yes.

6914. Then there is a question which I have been asked to ask you, going back to those cases of yours in Denmark, which you have put in your précis. In the cases in which you have had recurrence, have you any reason to believe that disinfection had been badly carried out, or that any different procedure had been adopted as compared with the other 300 farms on which disease did not recur?—I do not know definitely about that. I think the farms have been disinfected in the usual way. I have no reason to believe that the disinfection had been less good on these farms than on the others. I have no reason to believe that. Of course I do not know it, because I have not seen it myself; but in one of these farms, as the disease reappeared after a year, we disinfected the stable very carefully, and nevertheless it came again a year later. There was some hay and straw which we did not burn, did not destroy when the disease reappeared on the first occasion, and they told me, when the disease came again the third time, that just at that time they had used some of that hay which had remained in the loft a year.

6915. The hay in the loft up above?—Yes. Since that time we burn any such straw and hay which has been exposed to contagion.

6916. One other question: the animals you slaughter, do you cremate or bury?—No, we bury them underground.

6917. Both for anthrax and foot-and-mouth disease?—Yes.

6918. You only bury?—Yes, but rather deep.

6919. You bury them deep, but do you put lime with them?—Yes.

6920. Do you think that is quite the safe thing to do, with anthrax especially?—Of course, it may be better to burn them, but it is very difficult.

6921. Well, you know we in this country now burn for anthrax?—Indeed.

6922. (Mr. Morrison.) We find it easier?—Indeed.

6923. (Chairman.) We are very grateful to you for your evidence; we are much obliged to you for coming over all this way to help us; many thanks.—Thank you.

The Witness withdrew.

Sir WILLIAM HOWELL DAVIES, M.P., Chairman of Messrs. Davies & Co., Ltd., Leather Importers and Merchants Senior Partner of the firm of Messrs. John Cox & Co.'s Successors, Tanners, of Bristol, called in and examined.

6924. (Chairman.) You are Chairman of Messrs. Davies & Co., Limited, Leather Importers and Merchants?—Yes.

6925. You propose just to give us a short statement first of all, will you kindly do that?—I am not here to give expert evidence in regard to the question that has been put before you by Mr. Seymour-Jones, or by Professor Procter. Both these gentlemen are well known to me, and, whilst I have no interest whatever in either of them beyond that of a friend, I have considerable belief in their capacity for dealing with the subject which they have brought before you. The question of anthrax has been before the Board of Trade and the Home Office for some years, and we, as British tanners, received instructions some years ago, or Home Office Regulations I believe they were, instructing us how our men were to handle dry hides, hides from certain countries which were specified; but the instructions of the Home Office were so difficult to carry out that they

were never enforced. In my own business as a tanner we made all preparations to carry out, as far as we could, the desire of the Home Office, although we knew they had not enforced the Regulations; but we find it so difficult to get men who are in the habit of handling such goods as these to put on overalls, to cover their ears, to wear gauntlets right up their arms, and then, worst of all, when they have finished their operation, to indulge in the pleasure of a wash in clean water, and really it is absolutely hopeless to believe that men of that sort will carry out these Regulations. We provided everything that was necessary that the Home Office required, but we could never get our men to use them. We have had in Bristol one or two cases of anthrax arising from handling hides at our tanneries. I am not quite clear whether it was from green hides at the moment, or from dry hides. I believe in one case, at any rate, it was from a green hide, what we call a butcher's hide, lately slaughtered, unsalted, and

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we, as manufacturers, are very anxious to eliminate, if possible, from our own men this source of danger, and I do not think you would find any difficulty so far as British tanners are concerned to carry out any reasonable Regulations which you might suggest for eliminating, as far as possible, this risk from our men. I am quite familiar with Mr. Seymour-Jones's proposals for dealing with the hides at the ports of embarkation, but I think the time has not come for you to make a recommendation, if I might be allowed to say so, upon this process until we have had more practical demonstration of its effectiveness. I do not mean for the destruction of anthrax, but for the softening of hides. You asked a question of the previous witness about dry hides. Now, he probably did not know the difference between a dry hide and a dry salted hide, but there is a great deal of difference. A British tanner can soften a dry salted hide very easily. When I say very easily, in the ordinary processes which we adopt, apart from Mr. Seymour-Jones's process, within a few days, and by means of which we can bring those hides back to what we call the condition of a green hide. But, when you are dealing with dry hides, which are supposed to be the greatest sinners in bringing anthrax, they are the sun-dried hides, hides from South America dried far up the River Plate, or from China, or from Central America, or from the higher portions of South Africa, usually in very hot places, and where salt is difficult to obtain, and where transportation is difficult. Well now, Mr. Chairman, the effectiveness of this process of Mr. Seymour-Jones depends upon whether those hides can be softened within the time which is suggested in his pamphlet. If you are going to ask the Government to use their efforts to get an International Inquiry into this subject, you must be able to put before the other countries the practicability of the scheme that we are proposing, and, whilst I have no doubt that the proposal of Mr. Seymour-Jones would be perfectly effective for the destruction of anthrax; I am quite sure from the evidence that we have from Professor Procter, a man in whose judgment we may place profound confidence. We have made ourselves, in our own business, one small test with Mr. Seymour-Jones's process, and have not found it possible to soften the hides back within the time which he has stated, and if a very large number of hides come down, we will say from China or any other port of embarkation in a hot country, and have to be softened down and brought back to the condition of a green hide and then resalted so that it might come over as a salted hide, if the time is a much longer time than is suggested in Mr. Seymour-Jones's pamphlet, then the difficulty of dealing with them in this way will be very much aggravated. I will be quite willing myself to purchase a certain number of the dry hides of the sorts that are supposed to bring in the anthrax and to allow Mr. Seymour-Jones to make a practical experiment on our premises, before some officer that you may appoint belonging to the Board of Agriculture, to prove the effectiveness from the tanners' standpoint of the time taken in softening down these dry hides, because, you understand, I am not dealing with the expert side as to whether the mercuric chloride process kills anthrax; that is not the point, but whether the formic acid, the use of which will soften the hides within the time that he states. And I think that in the general interest, regarding the great importance of this question, you want to get an absolute demonstration that you can soften these hides, because it is no good asking Chinese or South Americans or South Africans, or wherever these goods come from, to adopt this process if you cannot soften the hides within a very short time. Mr. Seymour-Jones, in conversation with me and with my sons, who are practical tanners, stated that he thought there were certain defects either of mortar or something else in our pits when we made the experiment, and which absorbed the acids and prevented their operation upon the hide. I am quite prepared, as I say, to allow the process, under the most favourable circumstances and under the direction of an Officer of the Board of Agriculture, to be made on my premises if the Committee would like to have it done, and provided there are some hides available. There

may not be any hides available at the moment in the country, but if there are, in order to test that, we should like it for ourselves, because, as tanners, we would very much rather buy hides that are sold to us in a wet salted state, for this reason: when we buy these sun-dried hides they may look absolutely perfect, but when we soften them down we find they are half rotten, and if they are softened down at the port of embarkation, and then salted, we should see whether we are buying sound hides, or whether we are buying damaged hides. All tanners would like to know what they were buying. It is entirely a lottery when you buy these hides as to whether they have not been allowed to decompose considerably before they are sun-dried. Now, Mr. Chairman, there is another thing; I am quite sure this Committee will not make any recommendation to the prejudice of the British tanning industry. If we were to ask certain countries to do certain things which other countries were not asking, well, the result would be that our sources of supply, which are extremely limited now, would be going to countries which are less particular than we are, and it would be a very serious blow to a very important industry. At the same time, of course, what we would like, as an industry, is to eliminate as far as possible any risk that our men may run, but we should like, in doing that, to do it concurrently with the other nations who are in competition with us. I do not know that I have anything more to say than that. There is no doubt at the present time a shortage of hides. Whether it is that the production of animals has not quite kept pace with the improving circumstances of the nations of the world I do not know, or whether there are more people using leather now for boots than probably ever in the history of the world, and our supply of hides is scarcely now equal to the demand. And that applies to every great country of the world. We are paying extremely high prices for hides now, and it would be a very disastrous thing for our trade if we were to do anything that would limit our supplies.

6926. Well, Sir William, first of all, I think I might say that we are very glad to hear that you, as the head of a great firm, would not object to any reasonable Regulations that we might possibly suggest. That is satisfactory, most satisfactory; and I think also the Committee are grateful for the kind offer, on behalf of your firm, that you would welcome Mr. Seymour-Jones to give an experiment on a certain amount of hides, if they can be got?—Probably they can.

6927. But we have heard it in evidence from Dr. Parker yesterday that a good many experiments have taken place by tanners in this country, and up to date I think he said those experiments with Mr. Seymour-Jones's preparation had been satisfactory, with one exception. At the same time, if you would, as you say, kindly allow that to take place, I am sure it would be a satisfaction to the Committee before they possibly settled upon their Report?—You quite understand I did not suppose for one moment that our experiment has been wholly satisfactory, probably not carried out entirely under the full conditions which Mr. Seymour-Jones might lay down, but in a thing of this kind, when you are asking persons in distant parts of the world to adopt the process, it must be so absolutely clear that he who runs may read; there must be no mistake about it, and that the instructions for softening cannot be misunderstood.

6928. Quite so?—And if we have failed ever so little in our test, well then, it shows that the instructions that are given are not quite sufficiently ample at present.

6929. (*Sir Bowen Bowen-Jones.*) Could you give us your experience of your own test? It does not seem to have been quite satisfactory?—Only in so far that we were not able to reduce the hides to the original state, the soft state, within the time that is suggested in Mr. Seymour-Jones's process.

6930. Was that twenty-four hours?—Yes, in twenty-four hours.

6931. (*Chairman.*) But I think he said twenty-four hours for some skins and forty-eight hours for others?—It took us longer than that.

6932. It did?—I saw—whether it was Professor Procter or not I do not know—that one of the members

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of the Committee made a calculation that if you had a thousand hides to soften down in China you would want so many pits. If it is worked out at so many hides per pit, and that they could do it in a day, we could not do it. You see, therefore, it would require a great many more pits for the softening if it could not be done in a day, and it could not be done in two days.

6933. (*Sir Bowen Bowen-Jones.*) The softening would be done on the other side?—I quite appreciate that, but the point, as I understood, was that the softening could be done in a day or two days at the outside, and therefore it would not be a very great stumbling-block in the way of the exporters of those countries if they could be softened so easily.

6934. (*Chairman.*) I am perfectly sure of this, the Committee do not, naturally, wish to do anything against the British tanners. You may be quite sure of that?—Oh, quite.

6935. At the same time I am bound to say that our evidence which we have had for the last few weeks has come out rather strongly that the question of hides, the importation of hides into this country, both from a veterinary point of view and other points of view, is a source of danger as regards anthrax and foot-and-mouth disease, and what has been suggested is that a disinfection, as you have heard, should take place at the port of embarkation. You would suggest that some common action should be taken with other countries, France, Germany, Belgium, &c., importing hides, so that British tanners should not be at a disadvantage, as they would be if we alone put on Regulations requiring the disinfection of hides. That is your view?—That is so, yes. You know that Antwerp and Havre are the two great ports for dealing with hides on the Continent.

6936. Yes, quite so?—They are the ports of Belgium and France.

6937. A majority of the hides, we have it in evidence from Dr. Parker yesterday, come from South Africa?—Oh, no, South America. A large number of hides come from South Africa, but a very much larger number of hides come from South America.

6938. I misunderstood him. I understood the large majority was from South Africa?—The hides from the River Plate are about two millions a year. They do not all come to this country, but are exported from the River Plate, and about three-quarters of these would be what are called wet salted hides, and about a quarter of them would be these sun-dried hides, the sun-dried hides which come far down from Brazil, down the River Plate, in the hottest parts of that country. But nearly all the hides which come from the Argentine are wet-salted. Then, we get a very large quantity of hides from China. There are not so many now. There are a great many of these hides that would be doubtful, that come from various parts of North Africa, and then there are very large quantities of hides coming into England from the Continent. I am not referring now to hides imported from other foreign countries to Antwerp or Havre, but from Italy, and from South Germany and North Germany.

6939. Mr. Seymour-Jones, and one or two other witnesses, in their evidence said that this preparation which he proposes would be in the long run, he considers, a benefit to the tanners in this country?—I think it would.

6940. Because, he says, that they not only cure the hides, but they soften the hides; and, from the evidence of Dr. Parker yesterday, we had it that the outside increased cost of disinfection and of freight and other things, I think he said was sixpence, and the making of the pits and the working of the skins would be something like sixpence, certainly not more; and his opinion was that the English trade would be none the worse off, but that they would be the better off if that system were carried out?—I think we should be better off, and I explained to you the reason why; if it can be carried out at anything like sixpence a hide, it would open to us a much larger market of choice. At present, much the largest buyers of dry hides are the Continent of Europe and the United States, where the sweating process, especially in the United States, is largely used. If the Seymour-Jones process were adopted at ports of embarkation, and we knew what we were buying, we should

be quite prepared to sacrifice sixpence per hide, because of the fewer risks that we should take. A dry hide sometimes is a very profitable hide to a tanner, when it turns out better than he expects. At other times it is a most unprofitable hide, so unprofitable that my firm tans very few.

6941. (*Sir Bowen Bowen-Jones.*) Was Mr. Seymour-Jones's softening process satisfactory in its result with you?—You mean so far as the leather was concerned?

6942. So far as the leather was concerned?—Oh, yes, I think so. I do not think the formic acid or the mercuric chloride did any damage whatever.

6943. Then, whether it took 24 hours or 48 hours, two days or four days to soften, the time factor would determine the willingness to adopt the process, that would be the result?—No, I think it rather determines the willingness, at the various ports where such hides are exported, for dealing with this matter, because if they are to take a week to dissolve, they would require such a large number of pits that the possibility is there might be some objection to build these pits sufficiently numerous to deal with them.

6944. You mean space?—Space and conveniences at the ports.

6945. It might be difficult to find at the wharf the sufficient accommodation?—Or near by; it is only a detail, that.

6946. It is a question of price. If it takes 48 hours instead of 24, they would require more pits to be built and, therefore, it would cost more?—Yes, that is it.

6947. It comes to that in the long run?—Yes.

6948. Then there is one other point I just wanted to ask your opinion about. The United States of America now impose Regulations for disinfection before they receive hides from any country. Do you think, if they can put a Regulation of that sort into operation, other Nations cannot do it equally well?—I was not aware that they do that.

6949. They do it; it is on paper?—I believe it is one of those glorious things that reads very well on paper, but I do not think it is done.

6950. You do not think it is really operative?—No.

6951. You do not think they put it into operation?—I do not think they do.

6952. Well, they have got it amongst other Rules and Regulations?—I am very familiar with the American tanning business, but I have never heard of it there.

6953. I think one of our witnesses said that the Regulation was more followed in the breach than in the observance?—Yes.

6954. You do not know much about that?—No, I do not. I am very familiar with men who are engaged in the business in America, and have large transactions with them and often visit them and their tanneries, but I have never heard anything about it.

6955. (*Mr. Nunneley.*) As I understand it, Sir William, your objection to this process is partly, at any rate, because you are afraid that if we insisted upon it and other countries did not, the hides would go to the other countries instead of coming here?—Yes.

6956. If it were made universal by International Agreement?—I should wholly welcome it, because if you are eliminating disease you are eliminating risks of disease from our own men.

6957. And as a means towards that, would there be any great objection or any great difficulty, do you think, in our Government encouraging some firms or some country to try it?—Not at all.

6958. That could be done?—I should do everything I could to assist it. I might say, I am so convinced of the value of this process that I have myself been to the Home Office two or three times urging them to take this matter up. I regard it as being most important, but I want our Government, when they do anything, to proceed upon International lines, so that we may not be prejudiced by any new Rules that might be adopted in these various countries.

6959. And I suppose you are satisfied that you cannot practically get your men to take sufficient precaution to guard them against anthrax?—I am sorry to say we cannot do that.

6960. The only way really to guard against anthrax

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[Continued.]

to the men is to get the hides disinfected?—I am sure it is the only way.

6961. (*Sir Harry Verney, M.P.*) I have only one question. I understood you to say that if the cost was sixpence that would be well worth your while?—Yes; we should know what we were doing.

6962. It is rather problematical, really, what the cost is; there is some difference of opinion. I suppose ninepence would be probably worth your while?—When we are buying a dried hide, we pay so much for the hide and so much for the risk.

6963. Exactly, if the risk is eliminated?—I am not speaking of the risk of anthrax.

6964. I understand the commercial risk?—But, if the risk is eliminated, we know exactly what we can pay, and the sixpence on the hide would be a small amount compared with what we might be able to pay for the hide.

6965. If it were proved that Mr. Seymour-Jones was quite wrong in his calculations of the cost, and it was a shilling instead of sixpence, that would not affect your verdict?—I do not think he is wrong.

6966. You think it could be done for sixpence?—Oh, yes. I should quite agree with Dr. Parker. I think sixpence is quite an outside price.

6967. (*Sir Bowen Bowen-Jones.*) We have talked about hides; sixpence is the outside price for the largest hides, that is, what their calculations have been based upon?—If you use the word ox-hides, they are not all ox-hides; but, by that, we mean large hides.

6968. (*Mr. Morrison.*) I should like your opinion, as a practical man, how this could best be brought about, this desirable thing could best be brought about. We talk about International Agreement, but I suppose preceding that, there must be some experiment on a large scale which could not be carried out by International Agreement?—Well, I should say that, first of all, the Government before it takes action, must be satisfied with what it is going to recommend, they have demonstrated to be feasible and practicable and effective, and, if so, I should assume that they would have seen through some experiment, such as I have suggested I would be quite willing to carry out at my works under the direction of a Board of Agriculture officer. That is the first thing. Then, of course, you have got your evidence here from men of the stamp of Professor Procter and others, that this process would kill anthrax, and, if it would kill anthrax, it would kill foot-and-mouth disease; therefore, the only thing you ought to demonstrate is that the rest of the process would soften the hides, so that they could be made up to you as wet salted hides and exported to us in that form; and, if so, then I should think, if we were to proceed through the Tribunals, the Chambers of Commerce, or the Ministers of Commerce in the various countries, you could very soon get an International Agreement.

6969. Do you not think that you would immensely strengthen your case if you had this process actually carried out on a sufficiently large scale at some port of embarkation in a foreign country; would not that immensely strengthen the case which you would lay before other nations?—Yes, it would be, especially if we could do that in one of our own countries.

6970. Would it not be a practical thing to recommend that our Government should possibly guarantee some large firm in Britain against loss if they carried on such a large experiment at some port before putting them on board?—If you take India. There are very large numbers of dried hides, but you see the Indian hides are dried in so many different ways. You get them all plastered up with mud. I think Professor Procter gave evidence of that. That is not exactly what we should call the ordinary dry, but there are some dried hides which come from India, and it might be done there and the experiment might be tried there.

6971. Do you think a British firm would be willing to carry on such an experiment if it had proper backing by the Government?—You see, the Indian hides are small hides, light hides, and, therefore, would be more costly per hide than the ordinary ox and cow hides which are exported by other countries. The process

would relatively cost more per pound than the suggested sixpence upon an ordinary ox hide.

6972. (*Mr. Nunnecley.*) More per pound, but not per hide?—Not more per hide, but more per pound.

6973. (*Mr. Morrison.*) These are all things that you want thoroughly to experiment with before you go to any nation and say, "Will you join us in the matter?"—You want to establish a Board in your Departments, with two or three practical men to work out a scheme.

6974. But you think it could be done in that way?—Yes.

6975. Before we can hope for an International Agreement?—Yes. Of course you have to make some practical demonstration before you could approach other countries. I am perfectly certain that the demand for hides is so keen just now, that you would not find Belgium, or Germany, or France, or the United States agreeing to any proposals of this character unless they were International.

6976. (*Sir Bowen Bowen-Jones.*) The United States have got it now on paper?—Yes.

6977. We know that on paper?—They are first-rate hands at evading responsibility.

6978. (*Chairman.*) One more word, Sir William. Supposing it could be brought about, this experiment which you have so kindly put forward, how long would it be before that experiment could take place?—Well, I could ask my sons to get in hides. There may be some in the country, and it could be carried out next week, if there are any here.

6979. That would be a splendid thing if you would kindly do that for this reason, it would be so useful before we issue our Report?—Well, shall I communicate with Mr. Seymour-Jones and ask him if he is free?

6980. If you would, it would be most kind of you?—Then, if so, I think you ought to send someone down.

6981. From the Board?—Yes, so that you might have an unbiassed report.

6982. Yes, quite so?—Well, I will instruct my firm this afternoon and also communicate with Mr. Seymour-Jones.

Thank you very much; many thanks.

The Witness withdrew.

*Statement by Sir Wm. Howell Davies, M.P.,
April 23rd, 1912.*

Following out the suggestion which I made to the Committee, I have had some dry Columbian hides purchased and treated at my works in a solution of formic acid under the direction of Mr. Seymour-Jones, and there were also present Dr. Legge, of the Home Office and Mr. Landon, of the Board of Agriculture and Fisheries, my sons, Messrs. T. H. and O. S. Davies, Mr. Taylor, Manager of the Works, and Mr. Tanner Beamhouse, Foreman.

The pit used for the experiment was beforehand painted throughout in order that the old bricks and mortar might not absorb the formic acid.

The hides used were dried Columbian, of the usual folded pattern, and were what are known as flint dried. No hides known to me are more difficult to soften than these. Fifty of these hides were placed in the pit containing a weak solution of formic acid on Wednesday afternoon, April 17th, and on Thursday, April 18th, they were sufficiently softened back to unfold, and put back in the pit opened out flat. On Friday, April 19th, they were soft enough to put into the drum to work down. On coming out of the drum they were sufficiently softened to go into our usual "soaks" for this class of hide; they were not then ready to go into the "limes," as the fibres were not sufficiently opened, and a cut revealed much horny substance in the centre to which only a little moisture had yet penetrated; they will take probably five to ten days' more soaking before being ready for "limes."

But it would be advantageous to us as tanners if we could buy hides in the condition in which they were brought after two days' soaking with formic acid rather than in the flint-dried condition in which they are now brought to this country; as defects such as

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[Continued.]

bad flaying and rotten damage would be seen at once (which is not the case when hides are flint-dried), and a better idea of their value can be formed.

I was not present at the early stage of the test, but saw the hides after they had been 42 hours in the formic acid, and they were then in a condition which

would enable them to be salted and shipped to this country under wet salted conditions.

I was favourably impressed with the result obtained, and I think the Committee may reasonably feel that the test as made would justify them in carrying the scheme to a further stage.

Friday, 10th May 1912.

PRESENT:

THE RIGHT HON. SIR AILWYN FELLOWES, K.C.V.O. (*Chairman*), presiding.

Sir HARRY VERNEY, Bart., M.P.
Sir J. BOWEN BOWEN-JONES, Bart.
Mr. WILLIAM FIELD, M.P.

Mr. RICHARDSON CARR.
Major E. MARTEN DUNNE.
Mr. E. M. NUNNELEY.

Mr. W. H. F. LANDON (*Secretary*).

Mr. W. W. SMART, I.S.O., M.R.C.V.S., Superintending Veterinary Inspector, Board of Agriculture and Fisheries, re-called and further examined.

6983. (*Chairman*.) The Committee have asked you to come back again just for a minute or two as we have had some evidence from Mr. Mark Furnivall, who is representing the business of the Argentine trade. He gave us some evidence, and we undertook to ask shortly some veterinary evidence on one particular point that he mentioned. What the Committee would like to know from you is this: The reason for the regulations as regards the importation of animals from the Argentine?—I do not know that I can exactly speak for the reasons of the Board as regards the regulations. The Board are compelled by their statutory obligations not to admit animals from a country in which foot-and-mouth disease exists.

6984. The Board must be satisfied that foot-and-mouth disease does not exist in the country?—The Board before allowing cattle to be imported alive must be satisfied that foot-and-mouth disease does not exist in the country; that is provided for by an Act of Parliament.

6985. The witness rather gave us to understand that the journey from the Argentine was a 30-day journey?—Yes, about that.

6986. And he contended that if animals were put on board they would be able during those 30 days to develop foot-and-mouth disease on the journey?—Yes.

6987. And if they did not develop foot-and-mouth disease they were perfectly safe to be landed. That was his point?—Then I should say, sir, he is right on that point. The period of incubation of foot-and-mouth disease is usually about three or four days. Some observers have claimed that the period of incubation can be as short as 24 hours and that it can extend up to 10 days, but I should think that these are both very great extremes. As a matter of fact, and from observation by myself in foreign animal wharves, and from information I have had from the veterinary surgeons who have seen more of it in the country on the farms, I think we may very safely put down the period of incubation to three or four days; not more, and the difference between the three and four days is probably to be accounted for by the conditions under which the animals are placed. When we were importing cattle from the Continent—I am speaking now of 30 years ago—we had plenty of foot-and-mouth disease at Deptford Foreign Animals' Wharf; in fact the place was reeking with it. We used to import a cargo of cattle which were perfectly healthy on landing, and we used to expect them to develop foot-and-mouth disease in three days. Veterinary surgeons who have had a good deal of experience of it in the country districts have told me that they have usually found, when cattle were at grass, that they have developed it in about four days after contact with diseased animals, and, I think, perhaps the difference between the three and the four days is to be accounted for by the fact that cattle close together in a lair develop the disease rather more quickly than when they are at grass. So, assuming that a cargo of cattle

was shipped in the Argentine when the disease was in an incubative stage, they would undoubtedly have it well developed within the first week, that gives them three weeks to recover before they get to this country, assuming that they all get it at the same time, which probably they would not do. But even then, if it was a very mild attack, there is a possibility that they could develop the disease after leaving the Argentine, and practically recover before they got to this country. Personally I should not anticipate very much danger from such cattle themselves, after we got them to the Foreign Animals Wharf, but the danger would be from mediate contagion by manure, persons' clothing, cargo, etc.; there are any quantity of different avenues by which disease could leave the ship, and that is, I take it, the principal reason against the importation from the Argentine. That is leaving out the question of the statutory obligation.

6988. Quite so, and the policy of the Board, as laid down by Statute is that no animals are allowed to be landed here from an infected country?—That is in the Act; you have probably got a copy of the Act?

6989. Quite so. The danger which you anticipate is that in the manure and different things which you have mentioned, which would be on board the ship with these animals, would most probably be infected?—Yes.

6990. (*Mr. Field, M.P.*) But, as a matter of fact, have the Argentine Government satisfied you that there is no disease in the Argentine?—That I cannot say; I have no knowledge of that; I have no official knowledge of it.

6991. (*Mr. Richardson Carr.*) I do not think he said that, did he?—I do not think they have said that they have no disease.

6992. (*Sir Bowen Bowen-Jones.*) What he said was that it was up-country?—May I refer to his evidence which I have read?

6993. (*Chairman.*) Certainly?—He claims that the Board are making a very wide distinction between the Argentine and the United States.

6994. Yes, I know?—He contends, that although we now stop the cattle altogether from the whole of the Argentine country, when foot-and-mouth disease existed in America, we still allowed cattle to come from certain parts of that country; we scheduled only a portion of the United States; I think that is what he says.

6995. That is quite right?—Well, I may point out that so far as we have always understood, the police arrangements and the veterinary methods of administration in the United States and in the Argentine are widely different. In the United States it is, to a certain extent, more like England. It is divided up into counties; they have local administration, and America is a country where they can with a certain amount of certainty isolate the disease the same as we can isolate it in this country. In the Argentine, I understand that the police and veterinary arrangements are in a very crude

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[Continued.]

state; there is no certainty as to what takes place in the way of attempting to control the spread of the disease.

6996. (*Major Dunne*.) I take it myself that there is force in the point which was made by the witness, that the period of incubation is so short that it would undoubtedly develop during this 30-days' voyage?—Undoubtedly.

6997. That was one of his strong points?—That is correct.

6998. He is correct on that point?—Undoubtedly.

6999. But where you would draw a distinction between your experience and his is, that over and above the actual danger of the animals themselves being infected, that you consider that the droppings, or the clothes of people connected with them might give infection, though the animals themselves on arriving here might be absolutely free of the disease?—The disease might be conveyed into this country by the droppings.

7000. But what I am not quite clear about is, that if the animals themselves are clear of the disease during that period, how can their droppings be infected?—I mean the droppings that they leave behind them on board ship.

7001. You mean the animals themselves would have recovered?—The animals themselves might have recovered.

7002. But their droppings might still be infected?—The droppings that were left on the ship, that had been excreted during the time the animals were affected would be a probable cause of introducing the disease. Assuming that the animals were diseased, and that they all developed the disease during the first seven days of the voyage, they then would have three weeks to recover before they got here, and it would have to be a very mild case in which they all would have recovered to an extent that they would be free from conveying the disease.

7003. But what danger would there be, for instance, of the droppings, and so on, on board ship being in any way brought into contact with our animals here in England, because, I take it, the ship is cleaned, and so on; and nothing of that kind would be landed in any case, supposing they were infected?—Well, that is so, to a certain extent, but it would be dangerous from the fact of there being disease germs about the ship, which might very easily be conveyed by passengers.

7004. (*Mr. Richardson Carr*.) By the men?—By the men's clothes.

7005. (*Mr. Nunneley*.) By the men's boots?—By the men's boots, by cargo even; theoretically, cargo and animals' droppings do not come in contact on board ship. Any of the stevedores, or anybody connected with shipping will tell you that; but as a matter of fact, cargo and dung from imported animals frequently do come in contact on the ship; cargo is broached before the ship is cleansed.

7006. (*Major Dunne*.) The only reason why I am a little pressing this point is that I want the gentleman to see that we have not slurred over his objections. I want to bring it out quite clearly that we have gone into the matter as far as we can. Take this point now: Supposing the cargo came across, and there was no sign of foot-and-mouth disease during the whole period, you are supposing that a slight form of foot-and-mouth disease might break out during the journey, but the animals might have sufficient time to get the disease and recover from the disease and be practically well by the time they arrived here?—Yes.

7007. But suppose, on the other hand, that there was no case of foot-and-mouth disease during the whole of that 30 days' voyage, in your opinion, would it then be safe to have landed that particular cargo and allowed it not to be killed, but to be distributed throughout the country?—Not to be distributed throughout the country; in any case they would not be distributed throughout the country.

7008. I know, by regulation, but what this gentleman wants is the Statute altered?—To distribute them?

7009. He argued, that having come across here, having shown no sign of disease in the course of 30 days, it might be taken as absolute positive proof that

there was no chance of those animals having any virus, because they had been 30 days on the journey, and they had shown no sign of being infected. That would be his argument as stated?—I would not like to take that risk.

7010. I should not like to do so either, coming from an infected country. But his argument is, that if the animals are in any way infected, they would have developed the disease during the time they are on ship?—I should say he probably is right about that.

7011. If you allow that, he would go on to say, if they had foot-and-mouth disease in an incipient form, it would develop during those 30 days, and if it had not developed, he would argue that that particular cargo was free of disease?—Yes.

7012. He might argue, of course, that another cargo which has developed one or two mild cases which have recovered during the 30 days' voyage should not be landed, but, if landed, should be killed; but he would, I imagine, differentiate between those two cases. That is my point; what would your answer be to that, suppose he were here and asked that question?—I do not think there would be any danger from the animals in that particular cargo.

7013. From that particular cargo; but if you once relax the thing, it would be very difficult to say one cargo is to land and another is not. That is your point?—It would not be practicable.

7014. (*Mr. Richardson Carr*.) I only want to ask one question. Supposing, as Major Dunne says, a cargo of cattle could come over and be quite safe, not have anything, could they be possible carriers in any way; have the disease about them, without possibly contracting it themselves?—There is a possibility, but it is very remote.

7015. They would not carry it on their coats?—I can hardly imagine a susceptible animal—

7016. Not getting it somehow?—Carrying the germs of disease about him for a month, and then not contracting the disease himself, but conveying it to another. The germs might easily be carried on merchandise, clothing, or anything of that kind, but I can hardly imagine a susceptible animal carrying the germs of disease on his coat or his feet without becoming infected; it is highly improbable.

7017. Supposing they all did get this disease when they started and they had recovered, although you think they might be fairly safe, on the other hand would you call it a prudent action, supposing they did all recover, to take these cattle off a ship and put them on a farm in England?—Oh, no; it would be unthinkable.

7018. It would be unthinkable; even though, as you say, a man might be right in saying they might not be infectious themselves; still you do not think it would be a wise thing to cart them on to a farm in England?—Certainly.

7019. (*Mr. Field, M.P.*) I take it the reason why the Board of Agriculture have an objection to allowing cattle to come from the Argentine is, because they are satisfied the administration there is not carried out in the same perfect way that it is here, or in the United States?—Probably. To begin with, unless the Board is satisfied that the disease does not exist there, under the present Act, they cannot allow cattle to come.

7020. I quite admit that, but Argentina has a very large area of country?—Yes.

7021. And the cattle ranches do not come under the same observation naturally as they do in a country which is more thickly populated and where the cattle are more in touch with human beings?—That is so.

7022. Is not that the main reason?—That is the main reason.

7023. Is it your opinion, that notwithstanding any representation that may be made by the Argentine Government, it is quite possible, nay probable, the disease may exist without being reported to them?—Without them knowing anything about it; quite likely, I think, sir.

7024. Have you ever had any reports of that nature from men in the Argentine?—Plenty, but not officially.

7025. Not officially, but unofficial information is sometimes the best?—I know all about that.

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[Continued.]

7026. I just want to follow up shortly what Major Dunne and Mr. Richardson Carr were speaking of. There is no veterinary inspector carried on board those vessels with cattle, I suppose?—No, sir.

7027. (*Mr. Nunneley.*) Then, would it not be quite possible for a cargo of cattle to be put on board in the Argentine, and develop the disease mildly. Many of them are almost immune, if not quite, and so far as regards their recovering before they reach England, you would not see it when they came to England?—I have suggested the possibility of it; it is not, however, probable.

7028. By the time they got here, they would be in such a state that you would not see they had had it?—That is so. One would only detect evidence of the disease by very careful examination.

7029. Although you would see them at the time they were landed, you would not see that they had had it, and that would be one strong objection?—As a matter of fact, I have seen cattle landed from the Argentine in which the lesions were practically healed. The only indication that they had suffered from foot-and-

mouth disease were scars on the tongue, i.e. healed ulcers.

7030. It would require inspection to find that?—Yes, sir. It happened at the time we knew we were dealing with cattle from a foot-and-mouth disease infected country. In one particular cargo I remember we only diagnosed the disease after the animals were killed and when we examined the tongues.

7031. They were still in a somewhat dangerous state, I suppose, those animals?—I think they were.

(*Mr. Richardson Carr.*) I suppose what you mean, Mr. Nunneley, is, not having a veterinary inspector on board, they would not know whether it was foot-and-mouth disease or not.

(*Mr. Nunneley.*) No, you would not be certain that the people on board recognised it, or if they did recognise it that they would report it.

(*Mr. Field, M.P.*) I gather they know it as well as any veterinary surgeon, those experienced cattle-men, but it might be their interest not to report it.

(*Mr. Richardson Carr.*) Exactly; that is what I mean.

(*Chairman.*) Thank you, Mr. Smart.

The Witness withdrew.

APPENDIX I.

OUTBREAKS OF FOOT-AND-MOUTH DISEASE IN

County.	1870	1871	1872- 1876	1877	1878	1879	1880	1881	1882	1883	1884
Bedford - - -	190	307	No official record exists for the years 1872-6. Details for counties not available for the year 1877.		—	—	14	35	22	355	3
Berks - - -	196	417			4	6	10	24	4	30	2
Buckingham - - -	241	554			1	—	4	40	7	249	12
Cambridge - - -	231	733			4	47	38	145	13	161	8
Isle of Ely - - -	131	757			1	1	24	38	26	436	5
Chester - - -	1,555	2,464			7	2	—	53	23	266	20
Cornwall - - -	63	103			1	—	5	15	19	14	—
Cumberland - - -	1,260	1,100			1	1	—	3	1	3	—
Derby - - -	486	518			9	5	24	293	156	515	32
Devon - - -	531	777			—	1	19	22	5	4	—
Dorset - - -	1,268	283			3	11	1	11	—	11	—
Durham - - -	376	995			5	2	—	28	8	60	3
Essex - - -	370	1,462			9	2	188	149	104	627	38
Gloucester - - -	317	938			—	—	—	31	3	17	4
Hants - - -	1,234	454			10	14	12	53	6	101	10
Isle of Wight - - -											
Hereford - - -	53	459			1	—	1	2	3	2	1
Hertford - - -	249	404			2	—	17	52	17	126	12
Huntingdon - - -	50	721			1	5	40	36	39	966	1
Kent - - -	326	829			6	7	47	148	18	319	36
Lancaster - - -	1,435	4,461			11	2	3	423	81	850	148
Leicester - - -	335	268			9	—	9	283	177	1,094	51
Lincoln:—											
Parts of Holland - -	286	343			—	—	1	3	23	610	13
„ „ Kesteven - -	84	48			1	—	9	23	27	725	5
„ „ Lindsey - -	331	360			1	—	17	73	15	1,364	25
London - - -	60	78			1	—	51	239	26	151	27
Middlesex - - -	143	301			3	—	28	67	5	119	17
Monmouth - - -	417	343			—	1	—	—	—	13	—
Norfolk - - -	102	2,360			28	1	520	554	363	2,551	50
Northampton - - -	444	1,518			15	—	36	370	60	1,650	29
Soke of Peterbro' - -	63	40			—	—	1	2	11	205	—
Northumberland - - -	56	1,313			12	1	—	4	12	82	1
Notts - - -	63	6			2	—	17	89	70	409	32
Oxford - - -	164	368			3	2	—	13	—	21	—
Rutland - - -	84	209			—	—	—	5	15	349	5
Salop - - -	528	846			2	7	5	12	8	82	7
Somerset - - -	4,330	1,069			1	1	5	16	3	22	1
Stafford - - -	1,281	2,191			6	2	1	259	301	270	33
Suffolk - - -	278	1,101			3	1	200	148	57	615	19
Surrey - - -	194	360			6	—	37	119	16	130	25
Sussex, East - - -	209	952			9	2	47	72	7	162	10
„ West - - -											3
Warwick - - -	456	1,386			6	1	7	139	104	226	30
Westmorland - - -	328	246			—	—	—	—	—	1	3
Wilts - - -	1,318	697			13	4	1	58	3	12	—
Worcester - - -	161	572			4	—	—	31	18	50	10
York, East Riding - -	111	1,200			2	2	2	241	9	358	37
„ North „ - - -	1,225	2,043			9	—	3	36	17	213	19
„ West „ - - -	2,291	3,577			14	5	17	366	59	1,242	150
Isles of Scilly* - -	—	—			—	—	—	—	—	—	—
Total for England -	25,904	42,531	—	—	226	136	1,461	4,823	1,961	17,838	937

* Included, if any, with outbreaks in Cornwall.

EACH COUNTY OF GREAT BRITAIN, 1870-1911.

1885	1886	1887- 1891	1892	1893	1894	1895- 1899	1900	1901	1902	1903- 1907	1908	1909	1910	1911	County.
1	—	No outbreaks occurred in Great Britain during this period.	—	—	—	No outbreaks occurred in Great Britain during this period.	1	—	—	No outbreaks occurred in Great Britain during this period.	—	No outbreaks occurred in Great Britain during 1909.	—	—	Bedford.
—	—		—	—	—		—	—	—		—		—	—	Berks.
—	—		—	—	1		—	—	—		—		—	—	Buckingham.
—	—		—	—	—		—	—	—		—		—	—	Cambridge.
10	—		4	—	—		—	—	—		—		—	—	Isle of Ely.
—	—		—	—	—		—	—	—		—		—	—	Chester.
—	—		—	—	—		—	—	—		—		—	—	Cornwall.
—	—		—	—	—		—	—	—		—		—	—	Cumberland.
—	—		—	—	—		—	—	—		—		1	—	Derby.
—	—		—	—	—		—	—	—		—		—	—	Devon.
—	—		—	—	—		—	—	—		—		—	—	Dorset.
—	—		—	—	—		—	—	—		—		—	—	Durham.
—	—		2	—	1		4	2	—		—		—	—	Essex.
—	—		—	—	—		—	—	—		—		—	—	Gloucester.
—	—		—	—	—		—	—	—		—		—	—	Hants.
—	—		—	—	—		—	—	—		—		—	—	Isle of Wight.
—	—		—	—	—		1	—	—		—		—	—	Hereford.
—	—		—	—	—		—	—	—		—		—	—	Hertford.
—	—		42	—	1		—	3	1		—		—	—	Huntingdon.
1	—		1	—	—		—	—	—		—		—	—	Kent.
—	—	No outbreaks occurred in Great Britain during this period.	—	—	—	No outbreaks occurred in Great Britain during this period.	—	—	—	No outbreaks occurred in Great Britain during this period.	—	No outbreaks occurred in Great Britain during 1909.	—	—	Lancaster.
1	—		—	—	—		—	—	—		—		—	—	Leicester.
—	—		—	—	—		—	—	—		—		—	—	Lincoln :—
1	—		—	—	—		—	—	—		—		—	—	Parts of Holland.
3	—		—	—	—		—	—	—		—		—	—	„ Kesteven.
—	—		—	—	—		—	—	—		—		—	—	„ Lindsey.
—	—		11	1	—		—	—	—		—		—	—	London.
—	—		3	—	—		—	—	—		—		3	—	Middlesex.
—	—		—	—	—		—	—	—		—		—	—	Monmouth.
8	—		—	—	—		6	—	—		—		—	—	Norfolk.
—	—		—	—	—		—	—	—		—		—	—	Northampton.
—	—		—	—	—		—	—	—		—		—	—	Soke of Peterbro'.
1	—		—	—	—		—	—	—		—		—	—	Northumberland.
—	—		—	—	—		—	—	—		—		—	—	Notts.
2	—		—	—	—		—	—	—		—		—	—	Oxford.
—	—		—	—	—		—	—	—		—		—	—	Rutland.
—	—		—	—	—		—	—	—		—		—	—	Salop.
—	—		—	—	—		1	—	—		—		11	—	Somerset.
—	—		—	—	—		1	7	—		—		—	—	Stafford.
—	—		5	—	—		—	—	—		—		—	1	Suffolk.
—	—		4	1	—		—	—	—		—		3	—	Surrey.
—	—		1	—	—		—	—	—		—		—	—	Sussex, East.
—	—		—	—	—		—	—	—		—		—	—	„ West.
—	—		1	—	—		—	—	—		—		—	—	Warwick.
—	—		—	—	—		3	—	—		—		—	—	Westmorland.
—	—		—	—	—		—	—	—		—		—	—	Wilts.
1	—		—	—	—		1	—	—		—		—	—	Worcester.
—	—		—	—	—		—	—	—		—		—	—	York, East Riding.
2	—		1	—	—		—	—	—		—		2	—	„ North „
—	—		—	—	—		—	—	—		—		—	—	„ West „
—	—		—	—	—		—	—	—		—		—	—	Isles of Scilly.
30	—	—	75	2	3	—	18	12	1	—	—	—	2	19	Total for England.

OUTBREAKS OF FOOT-AND-MOUTH DISEASE IN

County.	1870	1871	1872- 1876	1877	1878	1879	1880	1881	1882	1883	1884	
Wales.												
Anglesey - - - -	2	273			4	—	—	—	—	37	3	
Brecon - - - -	—	55			—	—	—	—	—	—	—	
Cardigan - - - -	—	12			2	—	—	—	3	—	—	
Carmarthen - - - -	2	34			—	—	—	—	—	—	—	
Carnarvon - - - -	—	38			—	—	—	3	—	17	1	
Denbigh - - - -	40	413			1	—	—	4	1	260	1	
Flint - - - -	38	375			—	—	—	—	3	101	—	
Glamorgan - - - -	150	649			—	—	—	—	—	19	—	
Merioneth - - - -	—	9			—	—	—	—	—	—	—	
Montgomery - - - -	3	97			—	1	—	1	—	3	—	
Pembroke - - - -	5	58			1	—	—	—	—	—	—	
Radnor - - - -	17	91			—	—	—	2	—	1	—	
Total for Wales - - -	257	2,104	No official record exists for the years 1872-1876. Details for counties not available for the year 1877.		8	1	—	10	7	438	5	
Scotland.												
Aberdeen - - - -	165	733				—	—	—	—	—	19	—
Argyll - - - -	19	46				—	—	—	—	—	1	—
Ayr - - - -	53	981				—	—	—	—	—	24	—
Banff - - - -	15	128				—	—	—	—	—	3	—
Berwick - - - -	136	446				—	—	—	—	1	11	—
Bute - - - -	2	74				—	—	—	—	—	—	—
Caithness - - - -	3	1				—	—	—	—	—	—	—
Clackmannan - - - -	1	23				—	—	—	—	—	—	—
Dumbarton - - - -	14	184				—	—	—	—	—	3	—
Dumfries - - - -	124	397				1	—	—	—	—	2	—
Elgin, or Moray - - -	31	125				—	—	—	—	—	4	—
Fife - - - -	—	29				—	—	—	—	—	42	—
Forfar - - - -	116	664				—	—	—	—	—	81	6
Haddington - - - -	58	274				—	—	—	—	—	22	—
Inverness - - - -	4	112				—	—	—	—	—	—	—
Kincardine - - - -	3	146				—	—	—	—	—	11	—
Kinross - - - -	17	57				—	—	—	—	—	—	—
Kirkcudbright - - - -	31	281				—	—	—	—	—	4	—
Lanark - - - -	90	572				—	—	—	—	—	50	—
Linlithgow - - - -	25	238				—	—	—	—	—	10	—
Midlothian - - - -	3	235				—	—	—	—	1	48	—
Nairn - - - -	—	60				—	—	—	—	—	—	—
Orkney - - - -	—	—				—	—	—	—	—	—	—
Peebles - - - -	8	46				—	—	—	—	—	—	—
Perth - - - -	7	455				—	—	—	—	—	69	—
Renfrew - - - -	26	357				—	—	—	—	—	24	—
Ross and Cromarty - -	—	62				—	—	—	—	—	—	—
Roxburgh - - - -	65	264				—	—	—	—	—	1	1
Selkirk - - - -	11	15				—	—	—	—	—	—	—
Shetland - - - -	—	—				—	—	—	—	—	—	—
Stirling - - - -	41	388				—	—	—	—	—	14	—
Sutherland - - - -	—	3				—	—	—	—	—	—	—
Wigtown - - - -	25	133				—	—	—	—	—	13	—
Total for Scotland - - -	1,093	7,529	—	—	1	—	—	—	2	456	7	
Total for Great Britain -	27,254	52,164	—	858	235	137	1,461	4,833	1,970	18,732	949	

APPENDIX II.

PAPER READ BEFORE A MEETING AT THE ROYAL VETERINARY AND AGRICULTURAL COLLEGE, COPENHAGEN, ON FOOT-AND-MOUTH DISEASE, BY PROFESSOR B. BANG, COPENHAGEN, ON 16TH OCTOBER 1911. TRANSLATED FROM THE "UGESKRIFT FOR LANDMAEND," NOS. 43 AND 44, 1911.

The problem which I have promised to deal with at this meeting is unfortunately a somewhat pressing one, inasmuch as foot-and-mouth disease, which has threatened us for a long time owing to its widespread ravages in Germany and especially in Holstein and South Schleswig, has during the last fortnight cropped up in separate instances in several of our provinces. It may therefore interest a meeting of our farmers to hear something about this notorious disease.

Foot-and-mouth disease is an acutely infectious disease which chiefly attacks ruminating animals and pigs. It is said also to infect horses, dogs, and cats, and even poultry, but such cases are extremely rare and have probably never occurred in this country. Man is attacked occasionally, but, fortunately, not often; to children of tender age the disease may be fatal. Cattle, pigs, and sheep are the animals which are most affected by it.

After the infection has been caught it takes, as a rule, three to six days, sometimes more or less, from say two to ten days, and in the case of the pig only one day, before the animal sickens. It is a sort of exanthematic fever—akin to smallpox, measles, scarlet fever, and the like—that is to say, the disease begins with an ache throughout the system, and a fever, which after one to two days is followed by an eruption. When this has come to a head the fever ceases almost or entirely.

The first symptom is, therefore, that the animal seems unwell, eats less, and, if it is a milch cow, gives less milk. The temperature rises at once, to 40 to 41° C. or more in a cow, but this fever lasts only a couple of days, and in slight attacks it may be quite low. The vesicles or bladders begin to form in the mouth, and occasionally on the lips, snout, the nostrils, the skin round the hoofs—in cattle mostly in the cleft between the hoofs, and in pigs mostly immediately above the hoof on the outside, and in the skin of the foot joint. In many cases the skin round the teats is also attacked, and occasionally eruptions occur in the vagina of female animals.

The eruption consists in the formation of surface vesicles, the epidermis or the epithelium of the mucous membrane being lifted up in many places by an exuded watery liquid. The vesicles are small at the start, but usually they increase quickly in size; this is especially the case in cattle, which seems to have some connection with the fact that the epidermis of these animals is very thick, especially between the hoofs and on the tongue, so that it offers great resistance against the exudation pressure. The acute exudation, of course, causes pain, with the result that the animal goes lame, limps badly on the affected limbs, shakes its feet, lies down a great deal, and is unwilling to rise. Sheep and pigs sometimes creep about on their knees. Cows seem afraid to eat, keep the mouth shut, and make a loud smacking noise with the lips. Saliva forms in the mouth, and dribbles out in strings. If the cow's mouth is opened—a process which she is apt to resist—the vesicles above mentioned will be seen. They occur mostly on the surface of the tongue, especially on the flat part in front, but also on the thick part farthest back. The number of bladders or vesicles is not large as a rule, often only five to six, but frequently they increase quickly in size. They are usually the size of a shilling or half-a-crown, and sometimes attain a couple of inches in diameter. Large vesicles are likewise often to be found in the fore part of the toothless gums of the upper jaw, and smaller ones on the inside of the lips, on the palate and cheeks, and less often on the underside of the tongue. As the epithelium on the back of the tongue is very thick it cannot be determined at first whether it really is a case of vesicles, but the eruption takes the form of

large flat lumps covered by an apparently normal epithelium. If one tears a hole in one of these lumps, a clear liquid comes out. The epidermis can be loosened for some distance (sometimes one can tear away a piece of "skin" a couple of inches in diameter from the front part of the tongue), revealing a red—often very red—sore which is very apt to bleed. This exposure of the naked mucous membrane causes the animal sharp pain, which it shows by shaking its head violently, and at times it is driven quite mad. A little later the bladders burst by themselves without any such interference, and the loosened epithelium is detached, leaving large red sores. Often, however, the epithelium remains hanging on to either side of the sore, and in its macerated whitish state is then apt to present some resemblance to a loose deposit.

Approximately the same process occurs in the cleft between the hoofs. Here the bladders or vesicles mostly begin at the back, but, as a rule, they combine into one immense bladder, which extends throughout the length of the cleft, and after it has burst and shed the whitish-yellow "boiled" looking epidermis a large red sore is exposed.

On the teats the vesicles may at first be very small but numerous. Often there is an annular vesicle round the mouth of the teat itself. The eruption when occurring on the teats often combines into large, flat, somewhat flabby, irregular vesicles of a whitish-yellow colour. These are naturally easily torn in milking, and the epidermis soon cracks, as the skin is very thin at this point. The bladders are here also succeeded by reddish surface sores, which take some time to heal on account of the milking.

In other respects it may be said to be characteristic of the disease that it is a very superficial process. It amounts to a simple raising of the epidermis or epithelium of the mucous membrane caused by a serous exudation. There is no deeply rooted inflammation of the mucous membrane or corium; the sore simply consists in the laying bare of the surface of these parts, and it has a natural tendency to heal quickly. In a case of a deep sore which destroys the corium or mucous membrane itself the healing may be effected by the sore being filled with granulations, and the final healing may take place very slowly through the epidermis gradually stretching out from the sides; but in foot-and-mouth disease there are always small patches of cellular tissue at the base of the sore (down between the papillæ of the mucous membrane), and the sore may therefore in a very short time be covered with newly formed epidermis over the whole surface simultaneously. Thus it is found that these large sores can heal in eight days or less. The locality of the sore may, however, be traced for some time by a smooth, slightly depressed, thin-skinned patch, as, of course, it takes some time before the epidermis reaches its normal thickness.

Owing to secondary infection of the sore more severe inflammation may of course arise later, but this occurs extremely seldom in the mouth, especially when the animal is given suitable soft and clean fodder, whilst it is more apt to happen when the disease attacks the feet, especially the hind legs, and when the animal stands in manure or dirt mixed with urine, as, for instance, in dirty stalls without litter. Under such conditions deep gangrenous inflammation of the skin between the hoofs, sometimes even involving the tendons and joints—the malignant form of the disease—is frequently met with, and is due to infection with the necrosis bacillus, which occurs so largely in manure. Other bacteria can, of course, also enter the sore and give rise to inflammatory processes.

The teat sores may, as above stated, become irritated by the milking, and they are also liable to be infected

when the animal's litter is dirty, and deeper sores may thus be formed, which will heal slowly. But what is more dangerous still, bacteria may penetrate from the sores which frequently form on the tips of the teats into the lactiferous ducts and cause inflammation of the udder, which often leads to the destruction of one or several quarters.

Apart from these complications, which, under favourable conditions, when the animal is well looked after, are not very frequent, the disease is usually not a dangerous one. The cow attacked by it is usually very ill for some days, eats little or nothing, gives little milk (which on the other hand contains more fat than under normal conditions), and becomes very emaciated; but about three to four days after the mouth complaint has begun she begins to eat well again, she grows fatter, and resumes giving a satisfactory amount of milk. The foot lesions often cause inconvenience a little while longer, but, given favourable conditions, these also heal surprisingly quickly, and most animals seem quite well again after one to two weeks.

Sheep and pigs usually have less violent attacks than cattle, and they are more liable to the foot disease than to the mouth disease, which often escapes notice. Pigs, however, often shed the entire horn of one or several hoofs, especially when the animal is forced to walk.

In these circumstances, is it not a very mild disease which it is hardly worth while making such a fuss about? This was the general opinion in the old days. It was not until 1875 that the disease was classified in our country as a "malignant infectious disease," for which the law requires that infected cases shall be rigorously isolated. Before that time the public authorities usually did very little to prevent the spread of infection, and, as a result, the disease showed great fluctuations, and was particularly prevalent in 1841-42 and in 1869-71.

It is quite natural that many a farmer whose stock has had the disease in a mild form thinks that the isolation is worse than the disease itself, but it is nevertheless with good reason that general opinion as to the economic significance of the disease has undergone such a remarkable change during the last thirty to forty years. As a result it is now regarded as one of the most detrimental diseases among domestic animals, and the greatest efforts are now being made to keep it in check, although, unfortunately, in many places with little success.

It is true that the mortality is mostly low, usually barely $\frac{1}{2}$ per cent. among adult animals, but young calves are very apt to die, and sucking pigs under fourteen days nearly always die when the sow gets the disease; even when older, most sucking pigs die, and the survivors are very apt to be unthrifty.

There are many instances of the disease developing a very malignant character, with a mortality of from 5 to 50 per cent. among adult animals, and from 50 to 80 per cent. among young animals. Malignant epidemics of this kind are most apt to attack dirty and over-crowded farms, but they may also occur under favourable hygienic conditions. The disease may also occur in a very malignant form with numerous sudden deaths reminiscent of anthrax. Such epidemics have been observed in many different countries both in former and recent times. In 1839 2,000 head of cattle died in the Cantons of Berne and Fribourg in Switzerland; and in 1872, in the French Département of Nièvre, over 20 per cent. of the calves and over 22 per cent. of the pigs were destroyed by the disease in the course of two months. In the summer of 1892 there died in Bavaria over 3,000 head of cattle, and in 1896 in Würtemberg, 1,500. At Barcelona, in Spain, there died in 1901 50 to 70 per cent. of the young cattle. In Siebenbürgen 711 out of 7,498 head of cattle, or 9·4 per cent., were destroyed in 1899. In Holstein and Schleswig the disease occurred last summer in a distinctly malignant form. According to Dr. Bugge, of Kiel, deaths occurred in practically all the large stocks, and in many cases the loss amounted to 5 to 10 per cent. or over. Thus he mentioned instances in which 5 out of 20, 10 out of 80, 10 to 12 out of 100, and 10 out of 200 had died. In the September number of the *Landwirtschaftliches Wochenblatt* a tenant writes that 8 out of his 80 cows had died, and that in two villages

in the neighbourhood 25 and 15 cows, respectively, had been destroyed by the disease.

However, it is not these comparatively rare cases of great mortality that cause the chief trouble. It is the acutely infectious nature of the disease which makes it so serious. When it is left alone it spreads to an enormous number of farms, and with the present quick and easy systems of communications it may quite easily extend to nearly all the farms of a country or province, with the result that the aggregate of numerous small losses represents in the end an enormous sum. Thus, the loss suffered by Germany in 1892, when over 1,500,000 head of cattle, over 2,000,000 sheep and goats, and over 400,000 pigs were reported to be infected, was estimated at over 100,000,000 marks, and this year the loss is sure to be much greater.

This great loss is first and foremost due to the decreased secretion of milk. During the illness itself the yield of milk is nearly always greatly reduced, often to half the normal or less. However, as soon as the animal begins to eat again it usually rises, but it is only in exceptional cases, after very light attacks, that the secretion of milk again comes up to the normal.

Mr. Andersen, veterinary surgeon of Gimlinge, who in 1892-93 had charge of the disease in the part of south-western Sjælland which suffered most from the disease, states in his report (*Maanedskrift for Dyrlæger*, Vol. X.) that many cattle owners claimed that they were 4·8 lbs. short of milk per cow daily after the epidemic. Others reckoned that they only lost 2 to 4 lbs. daily, but even this small loss, if it continues throughout the milking period—which it usually does—will amount to a good deal of money. Andersen further writes: "When a cow sickens six to eight weeks before she is due to become dry, at a time when yielding 10 to 15 lbs. daily, the farrow period begins simultaneously with the disease." This is also an appreciable loss. Moreover, it is not unusual for a cow when attacked by the disease whilst dry to yield very little or no milk after calving, in spite of the fact that the udder is to all appearances healthy. The same may apply to cows calving whilst in the grip of the disease. Occasionally, according to Andersen, it is possible to work up the milk yield from such cows, but it seldom amounts to very much, say, one-quarter to one-half of the normal.

To this it may be added that in nearly all outbreaks some cows contract inflammation of the udder, with the result that many of these cows become more or less worthless for milking, whilst some cows get a malignant and persistent hoof complaint which weakens them greatly. Furthermore, a number of young calves and pigs die, as well as adult animals occasionally; abortion is also liable to occur; tuberculosis may sometimes suddenly attack a stock after it has been through foot-and-mouth disease—and all this without taking into account the emaciation caused by the disease (a matter of great importance when dealing with cattle fattened for killing).

It will be seen from the foregoing that it is hardly an exaggeration to estimate the economic loss from the disease at an average of 30 kroner (= 34 shillings) per cow. In Germany, however, the loss is put down at 50 marks, and Dr. Remmelts tells me that the loss in Holland amounted to at least 25 gulden, or over 2l., per cow.

To this must be added the fairly heavy expenses which are required for the proper care of the sick animals and the great loss which in many cases is the inevitable result of the isolation of stock, notices as to the boiling of milk, and the difficulties in connection with the trading, which latter may be of the utmost importance to a country like Denmark, where the export of live cattle constitutes such a valuable item of commerce.

There is thus every reason for dreading the disease and doing everything possible to prevent its gaining a firm footing in this country.

A study of the state of things prevailing in the great neighbouring country of Germany will be found very instructive when endeavouring to ascertain what may happen when the disease gains a firm footing. In that country it reigned uninterruptedly for twenty years, from 1886 to 1905, and twice, in 1892 and

1899, it became terribly prevalent. I give below the number of cattle in even thousands:—

1886 - 5,000	1896 - 710,000
1887 - 12,000	1897 - 537,000
1888 - 37,000	1898 - 462,000
1889 - 262,000	1899 - 1,885,000
1890 - 432,000	1900 - 430,000
1891 - 394,000	1901 - 80,000
1892 - 1,504,000	1902 - 20,000
1893 - 204,000	1903 - 11,000
1894 - 93,000	1904 - 51,000
1895 - 195,000	1905 - 9,000

A like number of sheep and goats were attacked by the disease, but fewer pigs.

It will be seen that in the first few years the disease did not assume dangerous proportions, but after three years it spread rapidly, and after another four years it reached its first climax, then went down rapidly for a couple of years, but increased again and reached its second climax in the thirteenth year. After that the figures fell appreciably, and after one or two fluctuations the number of cases was gradually reduced to an almost insignificant figure. The Germans were naturally very gratified at and proud of this favourable result, which was attributed to the more stringent regulations imposed by the public authorities. After a short period of official freedom from the disease it again began to assert itself at the end of 1905, but in 1906 only fifty-five communes were as yet attacked by it. Then the figure rose again, and in 1908 324 communes and over 18,000 head of cattle were affected. In 1909 the country was declared free again, but in December the disease cropped up on a private estate. There is no doubt that during recent years it has been introduced into Germany from the neighbouring countries, especially from Russia, where it seems to have established itself permanently, and from France; but I cannot help thinking that negligence on the part of the population, the concealing of cases of infection, and careless disinfection have had very much to do with it. When the disease is so well known the population is apt to lose interest, and tries to evade the inconvenience which the public preventive regulations give rise to.

During the past season a tremendous wave of the disease has passed over the whole of central Europe, probably the greatest epidemic that has ever taken place. At the end of May 1910 it broke out in several districts of East Prussia, and simultaneously at Chemnitz, in Saxony. It is said to have been introduced from Russia, and to have spread from cattle bought in a large cattle market in East Prussia. By degrees it extended from east to west over the greater part of the German Empire. In September 1910 it was only to be found on 244 estates, but on 1st July 1911 over 20,000 stocks were infected, and on 15th September 1911 37,180 stocks were affected, whilst the number of infected stocks in November 1899, when the disease last reached its climax in Germany, only amounted to 25,407. In the course of time the disease has gone back very much in the eastern provinces, but, on the other hand, it has gained a tremendous hold over the others. Thus, on 15th September there were 5,744 affected stocks in Oldenburg, and 7,576 in the province of Schleswig (especially Holstein and South Schleswig). The first outbreak in the latter province occurred in January 1911, and the disease was thought to have been introduced with affected sheep.

Austria and Hungary were also severely attacked by the disease at the same time as Germany, presumably also through infection from Russia. In these countries it has taken an even greater hold than in Germany. Thus, on 4th October there were 111,382 infected stocks in Austria, and on 27th September 45,563 in Croatia and Slavonia. In Hungary it has been very general, but is now confined to 7,961 stocks.

In France 33,966 infected stocks were notified in August 1911, and in Belgium, on 31st July, 5,225 stocks and over 50,000 head of cattle. In Holland 12,000, and at one time as many as 18,000, stocks of cattle have been notified, and Dr. Remmelts informed me lately that in the western parts of the country hardly a single stock had been spared, whilst the infection in the eastern part was less universal.

In Italy over 18,000 animals were attacked during the week preceding the 6th August, in addition to 107,000 animals over from the previous weeks. These figures show clearly enough what a scourge to cattle this disease now is in Europe

History of Foot-and-Mouth Disease in Denmark.

This is instructive in many respects. After the fairly severe epidemic in 1869 and 1870 had died away in the course of 1871, only occasional doubtful cases cropped up during the next few years, and in 1875, 1877, and 1878 there were a few series of cases, the nature of which, however, is also partly open to doubt. Thereafter we enjoyed complete immunity until the latter part of 1892, when the disease cropped up almost simultaneously in the neighbourhood of Skelskør, at Taasinge, and at Holstebro. Thence it spread fairly rapidly in south-western Sjaelland, and remained in this country until August 1893. Altogether, however, only 398 stocks were attacked, comprising 10,843 head of cattle, 2,220 sheep, 32 goats, and 6,785 pigs. Of these 398 stocks, 362 were located in Sjaelland and Møen, the distribution being as follows: 233 in Sorö district, 61 in Copenhagen and the district of Copenhagen, 35 in Praestö district, 30 in Holbaek district, and 3 in Frederiksborgs district. In other parts of the country it appeared at different points, but only in isolated cases or in very small numbers; thus only 3 stocks were affected in Maribo district, 5 in Odense district, 9 in Svendborg district, 1 in Randers district, 10 in Aarhus district, 7 in Ringkøbing district, and one in Vejle district—altogether 36 stocks. Thus it will be seen that even when killing was only resorted to at two small farms, careful isolation was in numerous cases sufficient to keep the disease in check.

In no instance was it possible to determine in what way the disease was first introduced into the country—and this was also the case with later epidemics—but there can hardly be any doubt that it came to us from Germany, which was very badly ravaged during that year. I am inclined to connect the dying out of the disease with the introduction of a very careful system of disinfection of the railway wagons used for cattle transport, this disinfection having originally been very faulty.

Later, during the next few years, there occurred a few very remarkable recurrences on estates which the disease had attacked six months to a year previously. Thus it cropped up on 20th November 1893 on the Bjernedegaard estate at Sorö, where it had made itself felt for the first time on 16th November 1892; next on 30th November 1893 at Dallund (Fyen), where it had occurred for the first time in May of the same year; and on 5th December 1893 at Rynkevang, near Kallundborg, where the first cases occurred on 12th December 1892. Finally, on 15th February 1894, it cropped up on the Brorupgaard estate at Slagelse, where it had been in March 1893. At all four places all the cattle which had been born on the estate after the last attack were killed, and also all cattle subsequently added (respectively, twenty-one, four, thirty-five, and, I think, about forty head), whilst I let the greater part of the stock live—that is to say, all the animals which had been through the disease on the previous occasion, and all these animals showed themselves to be immune.

As during this period there was not a trace of the disease elsewhere in this country, and there could not in any of the places mentioned have been any possibility of infection from abroad (except through fodder, which is imported by all farms here), it must be assumed without a doubt that the infection had remained hidden on the farm from the previous attack. All the houses were therefore subjected to a very thorough disinfection, and, especially at Brorupgaard, I remember that some rather expensive improvements were carried out in the woodwork of the buildings. Nevertheless, strangely enough, the disease returned a third time on this farm, on 2nd March 1895, that is to say, over a year later. On this occasion all animals introduced to or born on the farm since the previous outbreak were also killed immediately, making seventy-seven head of cattle in all, whilst I allowed all animals which had previously had the disease to live. They all

proved to be immune, even those which had had the disease badly two years previously. The only possible explanation seemed to be, according to the farm people, that shortly before the appearance of the disease the cattle had been fed on hay which had been lying in the loft over the cow-house since the previous outbreak. This hay was of course burnt, together with any other fodder which might possibly be thought to have been infected through the boots or clothes of the cow-man, and a large sum of money was also spent on rebuilding the cow-house, from which all woodwork was removed and replaced by iron, stone, and cement. Since then the disease has not reappeared on this estate.

It is, of course, doubtful whether the infection was really lodged in the hay, but it will be readily understood that since then I have been very anxious not to leave any fodder which might possibly be thought to be infected on farms where cattle have been killed.

These four, or rather five, recurrences at the end of six months to a year show in each instance that the virus may possess much greater tenacity than is usually supposed. It is generally taught that the virus can be destroyed fairly quickly, say, for instance, after desiccation for twenty-four hours, and that it is fairly easily killed by means of ordinary disinfectants. But, nevertheless, it has also been found that it may remain active in an attenuated condition for three to four months in hermetically sealed glass tubes, and this is further supported by the experience which we had this year in Jutland, where the disease in the neighbourhood of Aarhus returned about three months after an outbreak and a few days after carting out the manure left from the stock which was first attacked. It is therefore advisable in practice to assume that the virus may persist for a very long time.

Of course it may be questioned whether the recurrences referred to may not be attributed to entirely different causes connected with what we have learnt in recent times about various contagious matters, as, for instance, in the case of human typhoid, where certain individuals, so-called "bacillus carriers," although apparently cured nevertheless continue for years to give off virus, and may prove a great danger to the community as carriers of infection. In the case of foot-and-mouth disease, however, this hypothesis is controverted by the fact that I allowed the animals which had previously been through the disease to live, and that the disease nevertheless died out in the first three instances after the second outbreak and in the fourth instance after the third outbreak.

In another respect also my observations are very interesting. I refer to the question whether cattle as a rule acquire immunity by passing through the disease. On all the four farms this proved to be the case, and at Brorupgaard the immunity lasted two years. The text-books on the subject state that immunity is frequently acquired (some authors put it down at three to five or even seven years), but that such immunity may in very many cases be of short duration; in fact, it is asserted that cattle are quite frequently attacked by the disease several times in the course of one year. It may, however, be safely assumed that these are rare exceptions; I firmly believe that immunity is the rule. Seeing that, for instance, in Germany the disease diminishes appreciably after very widespread outbreaks, I can only conclude that this is largely due to the fact that the cattle have in many cases acquired immunity for a more or less protracted period. I do not think that Dr. Bugge, of Kiel, was right when he prophesied to the farmers in Holstein and Schleswig that the disease will spread still further next year—I hope that the contrary will be the case.

During the period from August 1893 to April 1896 we experienced in Denmark only the above-mentioned five cases on farms which had previously suffered from the disease. But subsequently, during the years 1896–1901, we had each year a few outbreaks, all of which were stopped very quickly by killing all the hoofed animals on the farm. In some cases the disease spread to a limited number of other stocks in the same neighbourhood, chiefly through the dairies, but in other cases it was limited to the farm which it had first attacked. In 1896 we had three outbreaks, *i.e.*, on 7th April at Bonderup, near Korsør; on 14th October on a farm at Nebbelung, near Rødby; and on

14th December at Havsgaard (Langeland). At the first-mentioned place 190 head of cattle, 13 sheep, and 152 pigs were killed. Here the disease spread during the following weeks to six other stocks, partly through the milk, partly by means of rats which migrated to a neighbouring property from a cow-house which had been disinfected after killing, and partly through the slaughtermen engaged at Bonderup.

This circumstance—in conjunction with the fact that animals killed in the country under such conditions fetch relatively little—induced me in all recent cases to adopt the radical measure of burying the slaughtered animals (excepting the few which could be used on the farm) in a large pit, to which they were led and where they were shot. In this way the casualties within a stock can be ended quickly, and in many cases before the disease has had time to attack many animals. It is obvious that the danger of infection is thus reduced as far as possible. It is, for instance, a means of dispensing with the services of slaughtermen, who are very dangerous carriers of infection. It is a little more expensive, but if one has at any rate to spend thousands of kroner in stamping out the disease I think it best to take radical measures at once. The result has in all cases justified this view. From the second outbreak at Rødby the disease spread partly through the milk and partly through the neighbours to seven stocks, which were at once destroyed.

In 1897 we also had three outbreaks, *viz.*, on 24th January and 24th October on two farms at Nysted and at Saksköbing, and on 12th February on a farm at Odense (Bellinge). From here it spread, on account of the nearness and through personal contact, to three other estates.

In 1898 the disease cropped up on 13th November on the farm of Nottrupsgaard in the southern part of the commune of Bjerre.

On 25th March 1899 a large peasant farm west of Rødby was attacked by the disease.

In 1900 we again had three outbreaks, *viz.*, on 3rd January on a farm at Radstad, near Saksköbing; on 27th January at Odegaard, barely $4\frac{1}{2}$ miles away; and on 7th January on a farm at Nyborg. The connection between Radstad and Odegaard is not clear; it is thought that perhaps game may have carried the infection. From Odegaard it spread to five other farms at Vignæs, all of which had had milk returned to them from a dairy which had been supplied with Odegaard milk. Unfortunately, the dairyman had had a birthday party the evening before the infected milk was delivered, and in the morning the pasteurisation had not been carried out properly, and this, without a doubt, was the cause of the infection. Finally, two months later the stock on a farm near Odegaard contracted the disease. Possibly the sending out of manure may have been the cause in this case.

On 20th January 1901 the disease reached a farm in the neighbourhood of Nysted.

After that we had a period of immunity until the 1st February 1904, when the disease suddenly cropped up in the island of Sjælland, on a farm at Frøslev in the southern part of Stevns. This stock was killed, but when the disease nine days later made its entry on the neighbouring farm the then Minister of Agriculture would not continue the killing. Although much was done to prevent the disease from spreading, and, for instance, one, and later on, two veterinary surgeons were despatched to Storehedinge in order, as far as possible, to save the local men from having anything to do with the disease, it spread during the following months to twenty other stocks, of which only one lay outside Stevns. In seven cases personal contact could be proved to have preceded the outbreak of the disease, and in three other cases this was probably also the cause. In one case infection was put down to mating with an infected bull. In several cases the infection was probably transmitted by the carting out of manure from infected stocks. To the last place the infection was probably carried by rooks, which had a colony close by. In addition to the stock first mentioned, killing was subsequently resorted to in one single small stock at Stevns, and also in the case of the small stock outside Stevns, which was the last to be attacked. This last outbreak occurred on 13th June.

Subsequently, Denmark remained free from the disease for six and a half years, until 24th November 1910. On that day it was discovered on a holding at Valby Mark, near Slagelse. The stock was at once destroyed, and since then the disease has not been known in Sjaelland.

On 12th December, however, it turned up on a large farm just outside Kolding, and on 13th December on a peasant farm at Lillering, west of Aarhus. Both stocks were destroyed at once, but on 26th December the stock of a tenant at Skoveby, close to Lillering, became infected. After the slaughtering of this stock there was peace until the middle of March 1911, when the disease appeared at one of the neighbours of the local forester. When the manure was carried out into the fields to be ploughed down it was noticed that numerous rooks settled on it, and thereupon flew away to a neighbour's turnip-pit which had just been opened for fetching home turnips. A few days later this man's cows became infected, and the disease now spread to altogether five stocks, in two cases doubtless through personal contact. All stocks were killed as quickly as possible, and all manure from these farms was buried.

At the end of April and the beginning of May the disease attacked two small adjoining farms in North Falster, and in July it appeared on a peasant farm in Langeland, close to the east coast of the island. These stocks were also destroyed.

As previously stated, it has not been possible in any one of the fairly numerous outbreaks of foot-and-mouth disease which we have had to deal with since October 1892 to prove in what way the infection was conveyed to the stock which first became infected. It is a striking fact, however, that the disease has, with very few exceptions, been restricted to estates in the southern part of the country—chiefly Lolland, Langeland, South Sjaelland, Fyen, Southern Jutland (Kolding and neighbourhood near the Vejle Fjord); and that once only, in 1892, it attacked Holstebro, and once, in 1910, the neighbourhood west of Aarhus. An estate close to the coast has had more frequent recurrences of the disease than any. This fact is difficult to understand on the assumption that the infection is conveyed by fodder from foreign countries, which is distributed throughout Denmark; but, on the other hand, it points distinctly to the infection being carried hither from Germany, where the disease has existed continuously. It must be a natural mode of transport, but which? I have thought for many years that it might be birds, such as gulls, crows, rooks, etc., which might conceivably fly across from Germany and carry infection in their feet, or possibly in their intestines after having collected it from infected manure. I also do not think it impossible that the infection may have been carried by the wind. It might be a question of particles floating in the air in a free condition, or attached to the legs of insects, or possibly spiders' webs, called in Danish the "flying summer," which just at this time of the year are seen flying about in profusion.

The virus itself is not known, but it has been proved to exist in the matter contained in the vesicles, and to be liberated when these burst. Thus it comes out in the saliva, the manure (after passing through the intestines), and the matter discharged from the vesicles on hoofs and udders. It is known that the virus is a very minute object—doubtless a microbe—that it passes through the pores of a filter; that is to say, it is smaller than the smallest of the bacteria visible under a microscope. It is likewise known that very little is needed to infect an animal with the disease, the inoculation of $\frac{1}{5000}$ th of a c.c. of the contents of a vesicle being sufficient. Such small objects do not require large means of transport.

I have not had time to examine very closely the direction of the winds prevailing at the various points where the disease has appeared, but a cursory inspection of the printed records of a meteorological institution shows that southerly, and sometimes south-westerly and south-easterly, winds have been blowing before each outbreak.

The remarkable fact that the disease may crop up in an otherwise healthy country without any apparent cause has been observed several times in England, which is no more inclined than Denmark to receive

animals with foot-and-mouth disease from infected countries. The theory of the wind as infection carrier is an old one, and in Holland observations have recently been made which seem to support it.

In Sweden observations were once made which seem to indicate that the infection can remain for a long time with an animal which has passed through the disease. A Dutch bull was once, after undergoing the prescribed period of quarantine, imported into a stock far north in Sweden, and several months later this stock was visited by the disease. It was then found that the Dutch bull had a deep slit at the back of the hoof—such as are often formed during the disease when the horn comes off—and that this slit, just at the time that the disease broke out in the stock, had grown so far down as to release, presumably, the virus hidden in it. But there can be no question of any such infection in our country, as in no case have cattle been imported from abroad.

Whatever may be the connection between the various cases here and foreign importation, it is plain that at the present time we are very liable to receive infection from Germany. It is difficult enough to avoid its introduction through persons who have visited German cattle markets or who have come into touch with infected stocks in Germany, but we are quite at a loss to cope with infection carried by birds or by the wind. The frequent occurrence of the disease during this season when turnip leaves are used as fodder might indicate that the latter are especially liable to carry the disease. This might be the case if the turnip leaves were used in the form of silage fodder, and although, for the reasons above stated, I do not believe much in the carriage of infection through foreign fodder or packing, it cannot, of course, be denied that there is something in the suspicion. The same applies to railway wagons used for cattle transport in Germany.

During the past month the disease has assumed somewhat disquieting proportions in our country. On 23rd September it appeared on a large farm, Nordenbrogaard, in the southern part of Langeland. Although the cattle were killed, not only there but also on three smaller estates in the neighbourhood, the disease nevertheless spread to two other large farms in the vicinity, namely Brolykke and Tryggelevgaard, and to four small farms near the latter. In Lolland it made its appearance in a very large stock at Fredsholm, near Nakskov, and later it cropped up at Halstedgaard, Arvelund, and Rudbjerggaard in the same neighbourhood, and at a small tenant's at Vaabensted, near Saksköbing, and another small holding at Langö, close by the Nakskovfjord. These two small stocks were killed, but naturally it was not thought right to expend the large sums that would have been required to destroy the large stocks.

In Fyen the disease appeared on 6th October on a peasant farm at Vantinge, west of Ringe, and the next day at Hvedholm, near Faaborg, and on a peasant farm at Drejø. These stocks were allowed to live, and the disease has since appeared in nine other small stocks in the part south of Odense, at Fraugde and neighbouring parishes. In some cases the mode of infection has been easy to trace, animals having been moved from one infected stock, where the disease was not discovered in time, to other stocks. In other cases it was clearly due to human agency, or it may have passed on to neighbouring properties, but in some instances the connection has not been explained. In a densely populated district with close intercourse there are, however, plenty of opportunities for the infection to be carried, even if the means is not always clear. Birds and the wind may, of course, play an important part. In Fyen the method of slaughter has hitherto only been applied in three small stocks.

Jutland has not been free either, and on 3rd October the disease was discovered on a small peasant farm at Staksrode, close to Vejle Fjord (Commune of Bjerre). The stock was slaughtered immediately, and up to the present there have been no recurrences there.*

* Since this paper was read there has unfortunately been a case in Sjaelland, on 23rd October, on a small holding at Falkkeberg Mark, near Dalmose. This stock is being slaughtered. Some of the above cases also occurred since the paper was read.

All this looks very disquieting, and some uneasiness is naturally felt as to how things will go this winter and next year. Are we possibly face to face with a great visitation of the dreaded disease, which may invade the whole country and cause incalculable loss by depreciating the value of our stocks and giving rise to unavoidable interference with our trade? One might almost be inclined to believe it. There are enough grounds for anxiety, and it is necessary for every stock-owner to be on his guard, so as to avoid all possible contact with infected stocks, either directly or indirectly; but it seems to me that the summary which I have given of the history of the disease in this country may serve to allay our fears to some extent. It is true that we have had many outbreaks, but we have succeeded in checking them quickly by killing sundry stocks or groups of stocks infected by those which were first attacked; and even in 1892 and 1893, as well as in 1904, when we did not resort to killing, we succeeded by effective isolation in keeping the disease within reasonable bounds, with the result that the situation here has been much better than in Germany and many other countries.

To succeed we require, however, in the first and foremost place great vigilance, so that cases of disease may be notified to the veterinary surgeons without any delay, and necessary steps be taken to isolate the infected stocks as effectively as possible. These precautionary measures of isolation must be carried out with forethought and thoroughness. It must be borne in mind that the virus in the case of this disease is extraordinarily liable to be transmitted, much more so than in the case of any other disease. It adheres to

clothing and articles, and may, for instance, without a doubt be conveyed to a stock of animals through a person who has not himself been in an infected building, but who has merely been in close contact with someone who has been there. The intimate social intercourse prevailing in this country, the many gatherings for pleasure and entertainment and meetings of all kinds, undoubtedly mean an increased risk of infection, and such intercourse should, therefore, in times such as these be greatly restricted.

Fortunately the disease has not so far been of a malignant character. Doubtless a number of young calves and pigs have died, and also occasionally older pigs, but hitherto there have been no casualties among adult animals, and the loss of milk seems hitherto in most places to have been moderate. This may, however, easily change, and I fear that it will probably be found in time that owners of stocks which are visited by the epidemic may sustain appreciable losses.

The treatment of diseased animals consists first and foremost in very thorough care. Suitable soft and clean fodder and ready access to water are the most important requirements as regards the mouth complaint, and dry and clean litter, with ample straw, is of the utmost importance when dealing with the teat and hoof complaints. Proper cleaning of the stalls and good ventilation are also very important. There is no specifically acting remedy as far as we know, and in its usual mild form no medicinal treatment is needed for the mouth disease. The affected teats and hoofs may, however, occasionally benefit by expert veterinary treatment.

APPENDIX III.

SUMMARY OF PASSENGER MOVEMENT TO THE UNITED KINGDOM FROM EUROPE.

	Total Inward.		Total Inward.
1901 - - - - -	702,555	*1906 - - - - -	932,340
1902 - - - - -	773,624	*1907 - - - - -	949,379
1903 - - - - -	814,441	1908 - - - - -	1,002,110
1904 - - - - -	802,949	1909 - - - - -	1,045,501
1905 - - - - -	850,563	1910 - - - - -	1,153,606

* Aliens Act came into force.

[Taken from Tables relating to Emigration and Immigration from and into the United Kingdom in 1910.—180. B. of T. 1911.]

EXTRACTS FROM THE ANNUAL STATEMENT OF TRADE OF THE UNITED KINGDOM WITH FOREIGN COUNTRIES AND BRITISH POSSESSIONS GIVEN TO SHOW THE FOLLOWING IMPORTS :

	Page.
Animals - - - - -	265-6
Bones - - - - -	267-8
Butter - - - - -	269-70
Milk - - - - -	271-2
Cattle foods - - - - -	273
Eggs - - - - -	274
Hay - - - - -	275
Straw - - - - -	276
Hides - - - - -	277-8
Horns - - - - -	278-9
Oilseed cake - - - - -	280-1
Skins, furs - - - - -	283-6

TABLE 14.

IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE FOR THE YEARS 1907 TO 1911.

Note.—The Summary Classes (and their sub-divisions) are shown in brackets with each article. See pages 1 to 3.

A. ARTICLES FREE OF DUTY.—For Articles subject to Duty, see Table 15, page 211.

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
AERATED AND MINERAL WATERS (I. C (I)):										
Germany	Dozen Bottles. 932,739	Dozen Bottles. 729,526	Dozen Bottles. 772,101	Dozen Bottles. 703,717	Dozen Bottles. 826,711	£ 173,625	£ 132,542	£ 144,012	£ 126,443	£ 150,339
Netherlands	38,273	59,867	22,690	43,213	22,585	7,258	12,330	3,939	9,708	6,200
Belgium	3,174	1,689	5,272	4,700	3,310	625	390	883	896	549
France	661,986	667,689	735,927	743,977	799,423	139,414	134,213	148,073	144,136	156,175
Spain	17,606	6,629	8,998	11,192	9,503	6,614	2,803	3,478	4,959	4,466
Austria-Hungary	122,317	135,974	121,369	116,533	108,146	47,753	51,558	47,334	45,668	40,929
Other Foreign Countries	15,160	7,870	9,214	69,078	7,196	3,025	2,429	3,193	9,260	2,080
Total from Foreign Countries	1,791,280	1,609,244	1,675,571	1,692,410	1,776,874	378,314	336,565	350,912	341,070	369,738
Total from British Possessions	346	2,717	1,430	2,301	1,109	108	418	265	413	145
TOTAL	1,791,606	1,611,961	1,677,001	1,694,711	1,777,983	378,422	336,983	351,177	341,483	369,883
AEROPLANES, AIRSHIPS, BAL- LOONS and Parts thereof* (III. N.):									£	£
France						—	—	—	52,157	42,100
Other Foreign Countries						—	—	—	3,799	2,330
Total from Foreign Countries						—	—	—	55,956	44,430
Total from British Possessions						—	—	—	250	—
TOTAL						—	—	—	56,206	44,430
ANIMALS, LIVING:										
„ Oxen and Bulls (I. B):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Total from Foreign Countries (United States of America)	348,937	258,070	200,142	129,375	148,057	6,026,745	4,448,493	3,518,171	2,393,131	2,824,152
Channel Islands	177	153	182	220	171	4,425	3,825	4,550	5,500	4,275
Canada	117,069	120,343	110,114	72,374	40,366	1,990,092	2,027,824	1,978,626	1,353,482	753,979
Total from British Possessions	117,246	120,496	110,296	72,594	40,537	1,994,517	2,031,649	1,978,176	1,358,982	758,254
TOTAL	466,183	378,566	310,438	201,969	188,594	8,021,262	6,480,142	5,396,347	3,752,113	3,582,406
„ Cows (I. B):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Total from Foreign Countries (United States of America)	2,245	1,630	5,301	9,007	7,752	31,532	26,385	84,582	146,060	128,904
Channel Islands	1,224	834	1,739	1,943	1,785	24,480	17,680	34,780	33,840	35,700
Canada	1,958	1,740	3,467	6,313	1,873	26,022	23,542	48,454	89,291	27,457
Total from British Possessions	3,182	2,624	5,206	8,256	3,658	50,502	41,222	83,234	128,131	63,157
TOTAL	5,427	4,254	10,507	17,263	11,410	81,834	67,607	167,816	274,191	192,061
„ Calves (I. B):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Total from Foreign Countries (United States of America)	4	—	6	5	8	12	—	5	6	7
Channel Islands	400	306	387	320	386	2,000	1,530	1,935	1,600	1,930
Canada	1	3	2	4	—	1	6	2	8	—
Total from British Possessions	401	309	389	324	386	2,001	1,536	1,937	1,608	1,930
TOTAL	405	309	395	329	394	2,013	1,536	1,942	1,614	1,937
„ Sheep and Lambs (I. B):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Iceland and Greenland	2,532	2,515	—	—	—	3,165	3,144	—	—	—
United States of America	67,860	46,000	6,583	—	42,805	105,997	69,891	10,475	—	66,136
Total from Foreign Countries	70,392	48,515	6,583	—	42,805	109,162	73,035	10,475	—	66,136
Total from British Possessions (Canada)	35,209	30,385	1,548	427	4,868	59,369	49,490	2,448	754	8,038
TOTAL	105,601	78,900	8,131	427	47,673	168,531	122,525	12,923	754	74,174
„ Swine (I. B):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
TOTAL	—	—	—	—	—	—	—	—	—	—
„ Horses (including Ponies):										
„ Stallions (IV.):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Iceland and Greenland	153	303	250	2	12	765	1,646	1,250	14	84
Netherlands	95	64	23	24	56	6,020	3,425	1,405	1,360	2,925
Belgium	201	212	230	347	234	16,990	17,370	18,890	29,040	18,920
France	876	846	1,579	1,352	986	109,911	74,270	168,130	128,250	120,108
United States of America	6	31	33	74	45	370	6,205	6,238	8,396	4,540
Argentine Republic	1	4	1	5	4	50	140	200	835	620
Other Foreign Countries	8	20	122	45	30	322	680	3,424	1,204	3,378
Total from Foreign Countries	1,340	1,480	2,238	1,849	1,367	134,428	104,236	189,537	169,099	150,575
Total from British Possessions	6	12	11	10	10	750	2,165	1,498	1,485	680
TOTAL	1,346	1,492	2,249	1,859	1,377	135,178	106,401	191,035	170,584	151,255

* Included in Carriages, etc., "Unenumerated" and "Parts thereof," prior to 1910.

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
ANIMALS, LIVING—continued :										
„ Horses—continued :										
„ „ Mares (IV.):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Russia - - - - -	3,250	2,712	3,535	2,724	2,424	37,928	31,963	39,826	31,557	28,338
Denmark (including Farøe Islands) - - -	44	10	10	24	9	599	561	650	308	765
Iceland and Greenland - - - - -	1,160	329	568	692	211	5,746	1,768	2,982	4,016	1,215
Germany - - - - -	8	5	107	67	13	600	220	1,749	1,217	310
Netherlands - - - - -	76	90	55	70	71	6,445	9,968	11,870	13,108	12,113
Belgium - - - - -	82	76	197	234	100	7,896	6,004	15,546	29,686	10,706
France - - - - -	356	244	861	750	450	42,492	25,654	88,565	73,310	54,366
United States of America - - - - -	254	561	223	287	264	14,949	43,405	19,290	23,872	17,750
Argentine Republic - - - - -	110	61	25	62	17	2,657	1,990	845	1,441	760
Other Foreign Countries - - - - -	7	14	3	4	7	300	998	160	150	675
Total from Foreign Countries - - -	5,847	4,102	5,579	4,914	3,566	119,612	122,531	181,483	178,665	126,998
Channel Islands - - - - -	5	1	3	3	5	225	20	95	45	235
British India - - - - -	5	8	18	20	13	570	500	1,570	1,970	985
Canada - - - - -	6	10	5	6	5	285	435	390	450	380
Other British Possessions - - - - -	4	9	11	8	6	220	527	1,016	385	520
Total from British Possessions - - -	20	28	37	37	29	1,300	1,482	3,071	2,860	2,120
TOTAL - - - - -	5,867	4,130	5,616	4,951	3,595	120,912	124,013	184,554	181,515	129,118
„ „ Geldings (IV.):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Russia - - - - -	5,881	4,790	5,496	5,038	4,336	63,007	49,013	55,879	52,107	45,080
Denmark (including Farøe Islands) - - -	41	10	17	24	24	707	938	962	481	732
Iceland and Greenland - - - - -	1,148	557	867	731	451	6,018	2,975	4,555	4,522	2,667
Germany - - - - -	69	76	409	214	169	1,036	1,283	5,388	2,776	4,509
Netherlands - - - - -	740	681	781	686	622	38,758	40,061	49,708	35,891	33,972
Belgium - - - - -	74	88	134	211	119	6,142	6,035	10,642	20,209	9,377
France - - - - -	202	206	349	220	254	16,201	13,824	28,782	20,217	28,349
United States of America - - - - -	526	754	408	369	239	25,256	51,584	28,640	26,820	15,010
Argentine Republic - - - - -	321	235	290	244	161	7,888	7,543	11,845	8,390	5,311
Other Foreign Countries - - - - -	10	17	9	10	9	309	990	416	426	550
Total from Foreign Countries - - -	9,012	7,414	8,760	7,747	6,384	165,272	174,246	196,812	171,839	146,557
Australia - - - - -	6	4	2	—	21	225	190	300	—	1,100
Canada - - - - -	160	152	116	89	126	6,805	6,681	5,720	4,570	6,335
Other British Possessions - - - - -	31	24	31	28	25	1,157	1,076	2,203	1,600	958
Total from British Possessions - - -	197	180	149	117	172	8,187	7,947	8,223	6,170	8,393
TOTAL - - - - -	9,209	7,594	8,909	7,864	6,556	173,459	182,193	205,035	178,009	154,950
„ Unenumerated (IV.):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Germany - - - - -	15,209	13,344	10,619	12,024	16,178	4,509	5,611	4,051	4,910	3,260
Netherlands - - - - -	33,954	27,693	32,904	28,151	23,493	4,378	3,400	4,907	3,518	2,810
Belgium - - - - -	58,185	28,938	18,416	17,100	12,458	3,890	3,764	3,501	3,707	2,962
France - - - - -	49,481	59,198	83,758	70,628	132,515	10,644	6,257	7,298	7,975	10,927
Italy - - - - -	1,397,706	1,638,093	1,113,955	1,167,312	1,140,982	3,619	4,803	3,523	3,842	3,241
United States of America - - - - -	860	618	619	248	1,960	412	1,740	452	1,449	1,275
Other Foreign Countries - - - - -	32,769	26,034	36,981	62,126	46,492	2,387	1,674	2,836	3,405	2,017
Total from Foreign Countries - - -	1,587,664	1,793,918	1,297,252	1,347,589	1,374,078	29,839	27,249	26,568	28,806	26,492
Channel Islands - - - - -	369	459	295	294	689	136	143	85	133	241
Cape of Good Hope - - - - -	2,161	195	69	20	2	1,448	603	104	333	110
British India - - - - -	579	871	212	513	1,922	938	1,127	487	985	2,769
Straits Settlements and Dependencies, including Labuan - - - - -	7	22	—	1,802	842	177	960	—	309	132
Australia - - - - -	433	2	1,369	1,320	3,628	596	15	266	411	879
Other British Possessions - - - - -	299	154	23	52	154	490	350	239	226	903
Total from British Possessions - - -	3,848	1,703	1,968	4,001	7,237	3,785	3,198	1,181	2,397	5,034
TOTAL - - - - -	1,591,512	1,795,621	1,299,220	1,351,590	1,381,315	33,624	30,447	27,749	31,203	31,526
APPAREL:										
„ Waterproofed by any process (III. I):						£	£	£	£	£
Total from Foreign Countries - - -	{ Apparel, Waterproofed by any process, is entered by value only.					3,227	6,752	8,098	7,377	4,335
Total from British Possessions - - -						—	73	46	—	188
TOTAL - - - - -	—	—	—	—	—	3,227	6,825	8,144	7,377	4,523

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
BASKETS and BASKETWARE (III. O):						£	£	£	£	£
Germany - - - - -	—	—	—	—	—	39,142	38,608	36,610	40,409	42,413
Netherlands - - - - -	—	—	—	—	—	44,115	44,096	48,013	45,187	45,128
Belgium - - - - -	—	—	—	—	—	65,161	52,761	56,922	52,127	51,717
France - - - - -	—	—	—	—	—	20,306	20,407	22,866	19,502	21,072
Switzerland - - - - -	—	—	—	—	—	8,883	6,788	2,225	2,367	2,456
Portugal - - - - -	—	—	—	—	—	4,201	3,302	3,486	3,674	4,437
Japan (including Formosa) - - - - -	—	—	—	—	—	34,171	39,501	34,554	27,066	33,216
Other Foreign Countries - - - - -	—	—	—	—	—	6,791	7,826	8,019	5,064	3,675
Total from Foreign Countries - - - - -	—	—	—	—	—	222,770	213,289	212,695	195,396	204,114
Total from British Possessions - - - - -	—	—	—	—	—	1,071	1,863	1,190	925	2,047
TOTAL - - - - -	—	—	—	—	—	223,841	215,152	213,885	196,321	206,161
BEADS, of all Sorts (III. O):	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	£	£	£	£	£
Germany - - - - -	221,786	177,225	164,368	235,443	235,374	8,681	6,550	7,421	8,871	7,963
Netherlands - - - - -	4,752	5,546	3,624	4,050	1,642	155	135	134	110	83
France - - - - -	113,833	39,880	50,513	30,495	29,867	5,515	1,741	2,572	2,075	2,311
Italy - - - - -	771,059	605,219	523,395	556,156	479,087	26,354	19,338	15,502	14,989	13,160
Other Foreign Countries - - - - -	58,972	58,582	34,133	44,708	22,124	3,264	2,729	2,484	1,549	1,033
Total from Foreign Countries - - - - -	1,170,402	886,452	776,033	870,847	768,094	43,969	30,493	28,113	27,594	24,550
Total from British Possessions - - - - -	120	672	430	584	—	46	30	33	31	—
TOTAL - - - - -	1,170,522	887,124	776,463	871,431	768,094	44,015	30,523	28,146	27,625	24,550
BEAD TRIMMINGS (III. O):						£	£	£	£	£
Germany - - - - -	—	—	—	—	—	38,986	13,662	33,443	54,299	40,358
Netherlands - - - - -	—	—	—	—	—	1,353	—	—	—	—
Belgium - - - - -	—	—	—	—	—	62	408	2,609	4,405	6,291
France - - - - -	—	—	—	—	—	618	333	32,305	117,792	137,532
Other Foreign Countries - - - - -	—	—	—	—	—	218	708	1,336	986	754
TOTAL - - - - -	—	—	—	—	—	41,235	20,116	69,693	177,482	184,935
BLACKING AND POLISHES con- taining no Spirit or Sweetening Matter* (III. O):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Germany - - - - -	44,454	42,375	37,024	44,263	41,141	134,170	132,843	116,414	127,502	115,412
United States of America - - - - -	12,112	8,926	8,159	9,173	10,724	24,283	14,643	16,494	16,219	20,674
Other Foreign Countries - - - - -	2,631	2,275	1,981	1,770	2,738	4,095	2,817	2,288	2,365	2,524
Total from Foreign Countries - - - - -	59,197	53,576	47,164	55,206	54,603	162,548	150,308	135,196	146,086	138,610
Total from British Possessions - - - - -	29	22	29	71	25	122	90	92	155	68
TOTAL - - - - -	59,226	53,598	47,193	55,277	54,628	162,670	150,398	135,288	146,241	138,678
BLADDERS, CASINGS, AND SAU- SAGE SKINS (II. K):					Lbs.	£	£	£	£	£
Denmark (including Farøe Islands) - - - - -	—	—	—	—	88,972	3,565	3,271	2,394	2,566	3,716
Germany - - - - -	—	—	—	—	650,540	56,173	73,389	59,570	32,198	53,903
Netherlands - - - - -	—	—	—	—	324,697	11,972	10,981	15,364	17,546	20,800
France - - - - -	—	—	—	—	141,527	4,314	4,119	5,633	5,040	8,678
Turkey - - - - -	—	—	—	—	70,038	3,777	5,461	4,789	11,109	1,886
United States of America - - - - -	—	—	—	—	3,938,858	123,065	122,657	179,386	135,188	162,722
Argentine Republic - - - - -	—	—	—	—	1,356,383	33,320	37,540	54,744	59,860	54,451
Other Foreign Countries - - - - -	—	—	—	—	474,602	4,591	12,643	7,013	25,143	37,079
Total from Foreign Countries - - - - -	—	—	—	—	7,045,617	245,777	275,086	329,443	333,150	343,235
Australia - - - - -	—	—	—	—	431,192	4,503	11,605	23,707	29,854	30,860
New Zealand - - - - -	—	—	—	—	1,717,575	92,698	110,877	144,083	174,459	144,914
Canada - - - - -	—	—	—	—	536,338	5,107	10,311	10,397	14,620	19,818
Other British Possessions - - - - -	—	—	—	—	62,969	115	349	1,731	2,439	2,015
Total from British Possessions - - - - -	—	—	—	—	2,748,074	102,423	133,142	179,918	221,372	197,607
TOTAL - - - - -	—	—	—	—	9,793,691	348,200	408,208	509,361	559,522	540,842
BONES (except Whalebone), whether burnt or not, or as Animal Charcoal, applicable to manufacturing pur- poses (other than Manure) (II. K):	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Russia - - - - -	—	283	132	199	1	—	2,462	1,086	1,651	16
Germany - - - - -	63	48	94	117	60	674	547	1,698	1,214	629
Netherlands - - - - -	191	289	195	241	57	1,610	2,365	1,633	1,474	894
Belgium - - - - -	121	133	160	134	205	1,527	1,751	1,686	1,939	2,778
France - - - - -	322	510	143	447	375	2,543	3,270	2,393	4,974	4,084
United States of America - - - - -	329	143	199	262	277	4,104	1,625	2,620	3,512	3,798
Brazil - - - - -	4,941	4,009	5,355	2,189	6,340	22,821	17,770	23,910	11,846	48,653
Argentine Republic - - - - -	169	2,040	1,513	700	162	930	3,564	6,368	4,077	1,137
Other Foreign Countries - - - - -	86	2,340	2,432	1,672	1,164	401	9,392	7,141	5,565	6,312
Total from Foreign Countries - - - - -	6,227	9,805	10,223	6,011	9,141	34,610	47,746	53,555	36,252	68,301

* For Blacking, Sweetened, &c., see under Sugar, &c., Table No. 15.

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
BONES, &c.—continued :	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Canada	25	17	—	34	—	104	186	—	216	—
Other British Possessions	19	61	61	168	31	134	316	438	758	83
Total from British Possessions	44	78	61	202	31	238	452	438	974	83
TOTAL	6,271	9,883	10,284	6,213	9,172	34,343	43,198	54,023	37,226	68,384
BOOKS, Printed, and other printed matter for reading purposes, includ- ing Music (III. O) :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Germany	13,526	16,270	12,999	11,567	13,768	97,876	104,454	83,384	78,211	88,700
Netherlands	997	1,155	1,390	1,958	4,860	3,710	8,963	13,205	12,879	19,924
Belgium	1,289	1,023	1,711	1,541	2,216	10,575	8,258	11,125	10,524	14,396
France	6,673	7,355	7,653	14,464	14,808	43,176	54,227	62,688	88,395	92,917
Switzerland	145	165	410	225	150	1,385	1,410	2,279	1,814	1,299
Austria-Hungary	495	447	357	250	245	4,202	2,940	2,910	2,204	1,879
United States of America	24,635	23,056	19,636	28,509	38,227	122,647	129,500	130,779	142,938	177,701
Other Foreign Countries	852	1,027	1,356	1,031	1,070	5,343	6,700	7,478	8,248	5,976
Total from Foreign Countries	48,667	50,498	46,012	59,545	75,344	299,414	316,452	313,848	345,213	402,792
British India	164	233	266	265	217	1,304	1,354	1,935	1,780	1,479
Australia	293	670	602	513	455	1,977	4,467	3,742	3,191	3,308
Other British Possessions	980	282	300	643	606	3,933	2,024	1,312	3,892	3,817
Total from British Possessions	1,437	1,185	1,163	1,426	1,278	7,714	8,345	7,539	8,863	8,604
TOTAL	50,104	51,683	47,180	60,971	76,622	307,128	324,797	321,387	354,076	411,396
BOOTS AND SHOES :	Doz. Pairs	Doz. Pairs	Doz. Pairs	Doz. Pairs	Doz. Pairs	£	£	£	£	£
„ Of Leather, or of which the chief Value is Leather (III. I) :	Doz. Pairs	Doz. Pairs	Doz. Pairs	Doz. Pairs	Doz. Pairs	£	£	£	£	£
Germany	16,653	16,545	17,311	20,306	22,504	40,644	44,713	40,156	46,991	52,422
Netherlands	1,781	2,166	2,233	3,178	3,446	4,357	4,694	5,833	7,954	8,250
Belgium	1,226	1,653	691	1,313	1,465	3,009	3,364	2,296	5,850	4,611
France	23,199	19,308	24,333	20,129	18,809	104,147	93,131	116,975	98,607	98,317
Switzerland	23,701	23,774	31,760	26,993	37,014	73,024	85,950	95,043	74,234	103,164
Austria-Hungary	42,182	36,043	23,343	24,814	21,872	131,091	116,924	95,872	81,351	73,028
United States of America	76,337	69,743	77,964	70,210	63,311	410,396	361,366	330,304	357,334	325,193
Other Foreign Countries	438	1,056	244	217	1,199	1,538	2,572	676	670	1,312
Total from Foreign Countries	135,567	175,293	183,379	168,160	169,620	768,206	713,214	737,655	673,541	666,802
Total from British Possessions	610	160	43	76	23	517	139	91	133	89
TOTAL	136,177	175,453	183,927	168,236	169,643	768,723	713,403	737,746	673,674	666,891
„ Of Caoutchouc, or of which the chief Value is Caoutchouc (III. I) :	Doz. Pairs	Doz. Pairs	Doz. Pairs	Doz. Pairs	Doz. Pairs	£	£	£	£	£
Germany	32,005	33,915	29,719	25,731	33,351	33,566	36,822	31,201	26,749	38,866
Belgium	91	291	6	31	5	111	392	11	42	20
France	5,455	4,131	8,578	8,353	2,761	6,106	3,480	7,467	7,346	2,446
Austria-Hungary	133	3,351	1,220	536	155	157	3,666	1,290	539	212
United States of America	84,101	68,887	102,054	117,876	73,874	103,139	75,715	121,527	151,567	115,346
Other Foreign Countries	6,004	127	1,299	4,483	4,084	6,391	158	1,323	6,770	6,711
Total from Foreign Countries	127,789	110,702	142,376	157,010	119,230	149,470	120,233	162,519	193,013	163,601
Total from British Possessions (Canada)	6,100	2,435	1,247	1,014	23	7,093	3,143	1,639	1,096	26
TOTAL	133,889	113,137	144,123	158,024	119,253	156,563	123,381	164,158	194,109	163,627
„ Of other Materials* (III. I) :	Doz. Pairs	Doz. Pairs	Doz. Pairs	Doz. Pairs	Doz. Pairs	£	£	£	£	£
Norway	—	761	—	362	839	—	1,270	—	234	610
Germany	—	16,733	17,926	19,025	30,431	—	16,115	18,430	19,113	29,670
Netherlands	—	1,066	1,282	856	1,122	—	1,291	1,579	839	1,272
France	—	48,141	43,753	69,577	79,223	—	33,926	28,091	40,323	43,343
Austria-Hungary	—	2,318	1,302	2,035	2,365	—	2,129	1,077	2,340	2,654
Other Foreign Countries	—	1,273	1,997	1,825	1,710	—	1,182	2,781	2,049	1,698
Total from Foreign Countries	—	70,292	66,260	93,680	115,695	—	55,913	51,958	64,388	79,247
Total from British Possessions	—	183	24	210	25	—	363	41	13	10
TOTAL	—	70,475	66,284	93,890	115,720	—	56,276	51,999	64,401	79,257
BRICKS† (III. O) :	Thous'nds	Thous'nds	Thous'nds	Thous'nds	Thous'nds	£	£	£	£	£
Germany	850	—	—	—	—	5,592	—	—	—	—
Netherlands	881	—	—	—	—	6,499	—	—	—	—
Belgium	1,894	—	—	—	—	6,802	—	—	—	—
Austria-Hungary	107	—	—	—	—	2,681	—	—	—	—

* Included in "Apparel" prior to 1908.

† From 1908 included in the headings "Bricks and Tiles of Brick Earth : Bricks," and "Bricks and Tiles, &c. : Tiles for Roofing and Street Paving."

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued*.

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
BRICKS* —continued :	Thous'nds	Thous'nds	Thous'nds	Thous'nds	Thous'nds	£	£	£	£	£
United States of America	2	—	—	—	—	34	—	—	—	—
Other Foreign Countries	110	—	—	—	—	432	—	—	—	—
Total from Foreign Countries	3,844	—	—	—	—	22,040	—	—	—	—
Total from British Possessions	5	—	—	—	—	15	—	—	—	—
TOTAL	3,849	—	—	—	—	22,055	—	—	—	—
BRICKS AND TILES OF BRICK EARTH:										
„ Bricks† (III. O) :	Thous'nds	Thous'nds	Thous'nds	Thous'nds	Thous'nds	£	£	£	£	£
Germany	—	109	103	38	58	—	851	635	128	145
Belgium	—	3,168	1,857	811	2,999	—	9,483	5,457	1,753	5,390
Other Foreign Countries	—	600	474	29	82	—	3,744	2,035	78	257
TOTAL	—	3,877	2,434	878	3,139	—	14,078	8,127	1,959	5,792
„ Tiles for Roofing and Street Paving† (III. O) :	Thous'nds	Thous'nds	Thous'nds	Thous'nds	Thous'nds	£	£	£	£	£
Germany	—	65	27	9	11	—	436	165	81	58
Belgium	—	236	17	154	242	—	990	76	662	992
France	—	62	38	21	—	—	191	56	42	—
Other Foreign Countries	—	61	38	128	25	—	342	146	530	141
TOTAL	—	424	120	312	278	—	1,959	443	1,315	1,191
BRISTLES (II. K) :	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	£	£	£	£	£
Russia	1,127,805	1,052,529	1,110,116	1,146,026	1,053,047	258,517	216,957	210,347	260,432	268,079
Germany	461,664	392,165	565,236	497,153	425,179	80,988	69,243	102,488	101,778	88,533
Netherlands	4,022	2,921	700	1,011	9,728	488	751	136	51	1,441
Belgium	30,413	15,444	21,624	14,956	18,858	5,393	3,008	3,556	2,743	3,537
France	252,558	227,603	259,647	262,772	173,083	36,490	37,554	43,066	42,100	30,375
China (exclusive of Hong Kong, Macão, and Wei-hai-Wei)	2,132,332	2,562,922	2,210,327	2,790,259	2,581,100	193,686	240,846	209,891	287,101	246,506
United States of America	9,568	33,498	5,571	10,797	57,048	1,282	6,751	639	1,374	4,940
Other Foreign Countries	14,028	15,486	12,337	14,564	18,236	1,209	2,080	1,182	1,925	2,741
Total from Foreign Countries	4,031,940	4,302,568	4,185,558	4,737,543	4,336,279	583,053	577,190	571,305	697,594	646,152
British India	261,119	260,683	221,948	240,843	261,679	43,000	41,652	36,245	37,053	50,820
Hong Kong	142,605	255,560	139,568	182,373	117,536	15,934	27,269	15,238	19,388	11,539
Other British Possessions	4,349	10,124	3,248	4,839	11,574	361	1,974	100	277	669
Total from British Possessions	408,073	526,367	364,764	428,055	390,789	59,295	70,895	51,583	56,718	63,028
TOTAL	4,440,013	4,828,935	4,550,322	5,165,598	4,727,068	642,348	648,085	622,888	754,312	709,180
BROOMS AND BRUSHES (III. O) :	Dozens.	Dozens.	Dozens.	Dozens.	Dozens.	£	£	£	£	£
Germany	531,600	497,758	484,388	561,393	579,856	136,976	129,878	134,617	154,694	148,504
Netherlands	25,395	23,609	23,472	20,243	21,040	7,392	7,363	7,145	6,117	7,040
Belgium	456,759	423,025	489,404	501,273	496,217	109,510	98,261	119,304	122,580	118,703
France	212,984	244,264	254,557	273,180	315,824	54,100	62,369	69,456	74,459	88,022
Italy	24,861	18,991	35,574	31,509	40,654	6,952	6,088	8,892	7,045	11,360
Austria-Hungary	34,472	39,259	37,410	55,239	71,697	8,333	10,080	10,964	18,820	24,212
Japan (including Formosa)	115,622	86,266	82,457	98,498	241,341	9,396	7,208	6,443	7,338	17,209
United States of America	20,401	19,827	15,706	10,638	24,567	10,819	12,038	7,210	4,511	9,360
Other Foreign Countries	16,913	12,042	13,327	28,379	35,152	6,869	5,323	5,426	3,404	9,431
Total from Foreign Countries	1,438,992	1,365,041	1,439,295	1,580,357	1,826,348	350,347	338,658	369,397	404,053	433,341
Total from British Possessions	1,150	2,673	2,607	3,207	14,533	420	1,204	955	2,078	2,620
TOTAL	1,440,142	1,367,714	1,441,902	1,583,564	1,840,881	350,767	339,862	370,352	406,136	436,461
BUTTER (I. C (1)) :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Russia	669,748	651,036	601,712	584,040	638,234	3,148,643	3,465,914	3,001,764	3,045,722	3,312,569
Sweden	244,399	284,364	312,142	345,684	360,357	1,366,608	1,694,964	1,801,095	2,022,398	2,183,770
Norway	23,468	27,409	29,476	22,081	29,813	122,553	155,304	163,866	127,003	173,939
Denmark (including Farøe Islands)	1,789,310	1,800,169	1,764,027	1,726,091	1,707,178	10,034,816	10,858,395	10,233,370	10,208,192	10,509,137
Iceland and Greenland	2,804	2,362	2,751	3,308	3,413	13,368	11,828	13,950	17,758	18,529
Germany	7,056	2,698	2,944	3,481	2,291	34,120	14,199	14,298	17,716	11,284
Netherlands	168,462	244,346	148,567	154,537	104,655	856,068	1,299,472	797,162	843,318	586,479
Belgium	875	477	9	32	95	4,876	3,609	58	186	462
France	281,100	394,365	413,306	361,249	171,030	1,650,111	2,264,229	2,318,887	2,116,072	1,066,702
Italy	21,444	22,605	14,018	9,028	2,485	117,790	127,500	78,115	50,250	13,559
Austria-Hungary	3	103	251	25	—	15	611	1,280	125	—
United States of America	1,111	44,333	693	756	23,052	5,690	239,417	3,575	4,075	119,172
Uruguay	241	495	—	—	—	1,374	2,815	—	—	—
Argentine Republic	51,122	61,131	73,553	65,944	24,209	273,433	348,708	392,014	374,285	145,154
Other Foreign Countries	5	7	88	37	144	23	35	897	146	663
Total from Foreign Countries	3,261,143	3,535,955	3,363,537	3,276,293	3,067,056	17,829,488	20,287,000	18,819,831	18,827,246	18,141,419

* From 1908 included in the headings "Bricks and Tiles of Brick Earth : Bricks," and "Bricks and Tiles, &c. : Tiles for Roofing and Street Paving.

† Included in "Bricks" and "China ware, &c., Earthenware," prior to 1908.

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—continued.

ARTICLES AND COUNTRIES. WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
BUTTER —continued :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
British India - - - - -	1,439	1,268	774	1,767	1,163	5,614	5,030	2,901	6,889	4,565
Australia - - - - -	599,001	409,106	396,986	667,968	896,085	3,008,298	2,298,849	2,007,677	3,566,952	4,604,284
New Zealand - - - - -	313,863	221,395	278,581	362,674	276,446	1,599,226	1,250,211	1,472,219	2,001,393	1,495,242
Canada - - - - -	34,705	43,084	22,522	16,805	61,936	175,297	239,748	120,083	90,797	355,063
Other British Possessions - - - - -	—	13	412	34	6	3	74	2,251	173	46
Total from British Possessions - - - - -	949,008	674,866	699,275	1,049,246	1,235,636	4,788,488	3,793,912	3,605,131	5,666,204	6,459,200
TOTAL - - - - -	4,210,156	4,210,821	4,062,812	4,325,539	4,302,692	22,417,926	24,080,912	22,424,962	24,493,450	24,600,619
BUTTER AND MILK —Mixtures of * (I. C (1)) :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
TOTAL (From Foreign Countries) - - - - -	—	10	—	310	338	—	49	—	1,302	1,620
BUTTONS AND STUDS (not of Metal) (III. O) :	Gross.	Gross.	Gross.	Gross.	Gross.	£	£	£	£	£
Germany - - - - -	1,867,565	1,677,879	2,055,306	1,856,017	2,209,645	144,279	142,625	183,884	164,513	202,423
Netherlands - - - - -	13,890	9,816	10,911	14,787	15,902	1,795	1,022	1,089	1,490	826
Belgium - - - - -	261,759	181,517	406,223	192,329	264,394	21,515	21,776	45,980	21,328	29,972
France - - - - -	437,691	418,242	606,484	627,563	886,939	41,819	38,164	52,238	56,277	71,441
Switzerland - - - - -	314,074	342,736	400,803	389,003	209,294	19,458	23,216	29,693	30,885	16,515
Italy - - - - -	612,399	643,687	694,279	1,077,892	2,375,264	27,847	32,496	36,688	58,063	95,288
Austria-Hungary - - - - -	742,323	649,710	738,826	844,551	619,228	79,953	70,951	70,785	76,201	62,807
Japan (including Formosa) - - - - -	73,152	139,991	223,265	700,495	1,389,481	2,613	6,454	10,111	23,799	66,116
United States of America - - - - -	290,109	411,429	1,342,444	1,666,956	872,323	17,876	22,632	27,497	39,040	22,954
Other Foreign Countries - - - - -	40	7,560	17,804	80	—	4	146	68	8	—
Total from Foreign Countries - - - - -	4,613,002	4,482,567	6,496,345	7,369,678	8,842,470	357,159	359,482	458,042	476,604	568,341
Total from British Possessions - - - - -	—	385	1,092	360	—	—	25	108	20	—
TOTAL - - - - -	4,613,002	4,482,952	6,497,437	7,370,038	8,842,470	357,159	359,507	458,150	476,624	568,341
CANDLES (III. O) :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Germany - - - - -	2,886	2,042	2,959	2,677	3,135	6,467	4,664	7,559	7,037	7,447
Netherlands - - - - -	1,236	771	1,061	1,023	1,989	2,811	1,768	2,181	2,104	3,781
Belgium - - - - -	1,446	1,818	1,160	988	1,227	4,007	3,751	2,357	1,915	2,487
France - - - - -	372	424	413	414	418	1,889	2,470	2,543	2,225	2,496
Other Foreign Countries - - - - -	122	191	86	153	106	347	350	213	353	238
Total from Foreign Countries - - - - -	6,062	5,246	5,679	5,205	6,925	15,521	13,003	14,853	13,634	16,449
Total from British Possessions - - - - -	98	328	107	454	133	274	606	213	863	245
TOTAL - - - - -	6,160	5,574	5,786	5,659	7,058	15,795	13,609	15,066	14,497	16,694
CANES AND STICKS, unmounted (II. K) :	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Germany - - - - -	2,576,630	3,512,530	3,002,250	1,899,971	2,258,092	20,760	27,016	22,178	22,113	20,978
Netherlands - - - - -	2,379,146	1,591,515	1,088,795	723,178	669,291	10,458	5,596	6,579	6,825	5,595
Java - - - - -	3,261,510	4,338,920	1,098,410	2,209,689	4,958,280	7,659	7,193	3,731	6,934	12,130
Other Dutch Possessions in the Indian Seas - - - - -	8,484,740	6,386,050	1,335,670	797,276	412,130	17,461	8,701	1,783	1,860	732
Belgium - - - - -	74,539	67,700	91,012	60,815	92,146	668	1,078	1,145	618	1,506
France - - - - -	242,019	1,054,211	156,793	280,623	304,361	2,568	2,836	2,336	2,557	4,021
Austria-Hungary - - - - -	380,417	788,850	433,238	228,174	332,401	7,026	6,202	5,672	3,488	4,437
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -	4,475,135	3,625,353	772,840	1,342,948	3,205,444	6,856	6,851	1,604	9,009	6,919
Japan (including Formosa). - - - - -	6,548,422	11,248,689	2,332,038	2,404,418	3,810,545	23,433	24,735	12,741	12,779	13,504
Other Foreign Countries - - - - -	67,371	232,255	319,410	73,560	1,451,050	918	575	1,845	224	3,697
Total from Foreign Countries - - - - -	23,489,929	32,846,078	10,630,456	10,020,652	17,493,740	97,807	90,783	59,614	66,407	73,519
British India - - - - -	91,755	131,833	67,548	125,980	147,390	1,063	1,369	984	1,588	2,015
Straits Settlements and Dependencies, including Labuan - - - - -	24,721,117	16,576,955	7,530,977	3,863,676	3,755,330	60,658	41,126	22,956	14,254	10,550
Hong Kong - - - - -	8,543,890	13,233,660	12,300,492	3,612,400	19,315,547	16,706	21,345	20,461	10,092	18,824
Other British Possessions - - - - -	96,984	203,760	139,443	66,169	82,464	921	1,788	419	1,181	870
Total from British Possessions - - - - -	33,453,746	30,146,258	20,038,465	7,668,225	23,300,731	79,348	65,628	44,320	27,115	32,259
TOTAL - - - - -	61,943,675	62,992,336	30,668,921	17,688,877	40,794,471	177,155	156,411	104,434	93,522	105,778
CAOUTCHOUC (II. K) :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Russia - - - - -	50,747	12,015	36,066	32,574	32,700	85,322	30,579	74,424	100,770	104,247
Germany - - - - -	28,865	30,737	40,254	58,377	42,814	265,977	236,168	269,372	549,597	278,600
German West Africa - - - - -	3,990	2,558	2,381	3,679	4,271	61,660	35,074	39,205	92,129	73,708
Netherlands - - - - -	3,895	8,596	6,780	6,364	4,628	100,682	64,878	39,780	22,747	61,908
Dutch Guiana - - - - -	1,092	416	4,793	1,385	3,099	14,425	5,590	61,435	18,185	140,178
Belgium - - - - -	4,953	5,737	8,224	15,764	13,970	71,960	60,664	99,318	301,788	161,363
France - - - - -	32,201	27,279	35,323	42,082	54,818	266,872	181,970	204,361	348,931	283,520
French West Africa - - - - -	35,871	29,136	30,686	30,714	25,627	552,505	343,522	493,983	677,323	456,624
French Somaliland - - - - -	224	243	1,273	2,206	1,287	4,669	4,085	27,598	63,040	24,316
Madagascar - - - - -	9,446	2,201	1,819	2,987	2,359	138,900	28,782	31,304	77,199	43,429
Portugal - - - - -	7,642	973	4,080	4,605	2,634	138,282	12,349	50,490	71,474	20,185
Portuguese West Africa - - - - -	4,043	1,616	4,593	3,139	1,151	48,447	17,111	53,352	76,579	20,328
Portuguese East Africa - - - - -	3,280	2,362	4,000	3,612	4,024	49,492	32,669	72,020	91,052	82,632
Congo Free State - - - - -	1,336	1,577	432	756	731	25,460	21,567	7,838	21,525	17,555
Liberia - - - - -	1,166	1,140	1,418	864	577	13,668	13,886	14,717	15,820	6,928

* Included in "Butter," prior to 1903.

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
METHYLIC ALCOHOL (not purified so as to be Potable) (III. O):	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	£	£	£	£	£
Germany - - - - -	21,863	5,856	20,987	4,090	820	2,548	745	2,728	547	121
Austria-Hungary - - - - -	—	—	16,650	—	—	—	—	2,115	—	—
United States of America - - - - -	327,541	353,878	291,349	399,183	438,737	27,312	28,633	27,111	41,849	45,784
Other Foreign Countries - - - - -	17,617	14,020	27,346	13,542	16,393	1,744	1,426	3,476	1,579	1,822
Total from Foreign Countries - - - - -	367,021	373,754	356,832	416,815	455,950	31,604	30,804	35,430	43,975	47,727
Canada - - - - -	83,760	99,720	144,897	31,700	128,406	6,583	6,155	11,719	3,314	13,638
Other British Possessions - - - - -	—	—	240	—	—	—	—	32	—	—
Total from British Possessions - - - - -	83,760	99,720	145,137	31,700	128,406	6,583	6,155	11,751	3,314	13,638
TOTAL - - - - -	450,781	473,474	501,969	448,515	584,356	38,187	36,959	47,181	47,289	61,365
MICA (II. K):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Germany - - - - -	1,308	653	672	1,171	971	6,724	2,996	2,743	4,589	4,170
German East Africa - - - - -	—	160	610	97	—	—	470	3,084	382	—
United States of America - - - - -	1,907	2,672	1,271	1,936	1,633	4,038	5,674	1,940	3,751	1,779
Brazil - - - - -	51	208	36	2	—	316	766	163	23	—
Other Foreign Countries - - - - -	572	501	204	1,005	1,267	1,632	2,358	987	4,259	5,240
Total from Foreign Countries - - - - -	3,838	4,194	2,793	4,211	3,876	12,710	12,264	8,917	13,004	11,189
British India - - - - -	31,747	24,446	23,252	22,438	25,796	138,381	85,550	98,774	93,223	102,002
Canada - - - - -	1,568	2,187	602	1,366	1,064	10,596	15,301	6,327	10,185	8,129
Other British Possessions - - - - -	361	218	21	98	39	1,656	776	182	598	208
Total from British Possessions - - - - -	33,676	26,851	23,875	23,902	26,899	150,633	101,627	105,283	104,006	110,339
TOTAL - - - - -	37,514	31,045	26,668	28,113	30,775	163,343	113,891	114,200	117,010	121,528
MILK:	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
„ Fresh (in cans or drums) (I. C (1)):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Netherlands - - - - -	—	—	15	438	2,601	—	—	8	228	1,166
France - - - - -	156	953	6	1,531	8,614	68	437	4	726	4,012
TOTAL - - - - -	156	953	21	1,969	11,215	68	437	12	954	5,178
„ Cream (I. C (1)):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Norway - - - - -	1,202	1,345	800	870	1,020	3,916	4,564	2,957	3,117	3,735
Netherlands - - - - -	169	485	105	85	2,043	393	1,377	224	189	5,592
France - - - - -	2,821	4,839	5,376	10,219	7,535	11,904	20,200	24,447	43,156	31,236
Other Foreign Countries - - - - -	39	193	56	23	39	77	415	247	70	130
TOTAL - - - - -	4,231	6,862	6,837	11,197	10,637	16,290	26,556	27,875	46,532	40,743
„ Condensed, Not sweetened (I. C (1)):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Norway - - - - -	16,008	28,053	35,312	52,348	45,314	25,766	47,873	64,186	91,851	2,503
Netherlands - - - - -	1,440	2,064	2,211	5,013	8,276	2,103	2,589	2,773	6,184	11,298
France - - - - -	254	74	1,583	1,801	714	405	119	3,026	1,721	1,030
Switzerland - - - - -	3,962	5,712	7,740	6,704	3,585	7,889	10,981	15,079	13,096	6,971
Other Foreign Countries - - - - -	665	389	366	292	1,021	1,093	637	576	462	1,810
Total from Foreign Countries - - - - -	22,624	36,292	47,212	66,658	58,910	37,256	62,199	85,640	113,314	103,612
Total from British Possessions - - - - -	103	101	457	20	53	179	116	782	24	102
TOTAL - - - - -	22,627	36,393	47,669	66,678	58,963	37,435	62,315	86,422	113,338	103,714
„ Milk Powder, not sweetened (I. C (1)):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Sweden - - - - -	7,523	5,523	1,263	3,138	3,221	11,520	7,355	1,669	4,573	4,838
Denmark (including Farøe Islands) - - - - -	4,061	5,749	516	1,644	1,976	6,212	7,467	690	2,394	2,837
Germany - - - - -	834	1,162	890	225	684	3,276	3,312	2,750	444	1,040
Netherlands - - - - -	1,675	3,579	4,293	7,544	9,225	2,663	7,126	6,970	10,985	14,459
France - - - - -	2,815	4,000	3,421	3,105	1,334	6,551	7,524	8,686	7,824	4,858
United States of America - - - - -	198	1,205	1,289	101	2,225	1,436	2,687	2,966	1,075	5,136
Other Foreign Countries - - - - -	752	801	2,205	3,266	6,691	1,188	1,710	4,266	5,384	10,484
Total from Foreign Countries - - - - -	17,858	22,019	13,877	19,023	25,356	32,846	37,181	27,997	32,679	43,652
Total from British Possessions - - - - -	911	415	449	1,358	3,884	1,721	478	1,236	4,148	10,849
TOTAL - - - - -	18,769	22,434	14,326	20,381	29,240	34,567	37,659	29,233	36,827	54,501

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—continued.

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
MILK, Preserved, other kinds, not sweetened, (including im- poverished, humanized, pep- tonised, and sterilized milk) (I.C (1)):										
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Norway - - - - -	1,160	587	825	618	929	1,705	806	1,140	832	1,384
Netherlands - - - - -	2,376	3,104	2,484	2,680	1,220	2,495	3,554	2,914	1,392	879
France - - - - -	2,748	3,818	2,971	6,122	4,134	662	900	700	1,653	1,085
Other Foreign Countries - - - - -	691	697	708	947	416	1,188	1,126	1,087	1,199	497
Total from Foreign Countries - - - - -	6,975	8,206	6,933	10,367	6,699	6,050	6,446	5,841	5,576	3,845
Total from British Possessions (Australia) - - - - -	—	—	—	45	—	—	—	—	54	—
TOTAL - - - - -	6,975	8,206	6,933	10,412	6,699	6,050	6,446	5,841	5,630	3,845
MOSS LITTER (II. K):										
	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Sweden - - - - -	419	815	4,932	3,434	1,716	507	1,042	6,005	4,180	2,083
Germany - - - - -	6,523	5,692	6,732	6,447	3,250	7,891	6,309	7,525	6,781	3,565
Netherlands - - - - -	71,273	68,237	64,776	64,237	73,048	87,368	83,496	79,603	78,442	86,632
Belgium - - - - -	2,385	1,726	361	1,890	892	2,968	2,651	558	1,981	987
Other Foreign Countries - - - - -	103	—	—	6	—	115	—	—	7	—
TOTAL - - - - -	80,703	76,470	76,801	76,064	78,906	93,849	93,498	93,691	91,341	93,267
MOULDINGS for Picture Frames and Gilt Mouldings (III. O):										
						£	£	£	£	£
Norway - - - - -	—	—	—	—	—	1,834	1,796	3,573	5,547	4,908
Germany - - - - -	—	—	—	—	—	225,369	189,764	158,285	149,466	155,678
Netherlands - - - - -	—	—	—	—	—	21,398	21,136	14,883	11,612	17,112
Belgium - - - - -	—	—	—	—	—	6,523	5,008	4,818	5,953	7,415
United States of America - - - - -	—	—	—	—	—	16,724	9,809	10,207	11,096	8,583
Other Foreign Countries - - - - -	—	—	—	—	—	794	1,257	1,874	1,611	3,879
Total from Foreign Countries - - - - -	—	—	—	—	—	272,642	223,770	193,640	185,285	197,575
Total from British Possessions - - - - -	—	—	—	—	—	108	13	169	18	58
TOTAL - - - - -	—	—	—	—	—	272,750	223,783	193,809	185,303	197,633
MUSICAL INSTRUMENTS:										
„ Organs and Harmoniums (III. O):										
	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
United States of America - - - - -	4,597	4,252	3,371	2,560	2,347	68,636	59,920	45,432	38,794	30,220
Other Foreign Countries - - - - -	140	161	249	202	204	7,075	9,029	5,863	6,493	6,141
Total from Foreign Countries - - - - -	4,737	4,413	3,620	2,762	2,551	75,711	68,949	51,295	45,287	36,361
Canada - - - - -	2,781	2,208	1,359	1,070	1,839	25,132	20,321	14,436	10,883	20,956
Other British Possessions - - - - -	—	1	—	—	—	—	20	—	—	—
Total from British Possessions - - - - -	2,781	2,209	1,359	1,070	1,839	25,132	20,341	14,436	10,883	20,956
TOTAL - - - - -	7,518	6,622	4,979	3,832	4,390	100,843	89,290	65,731	56,170	67,317
„ Pianos (III. O):										
	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Germany - - - - -	20,319	18,292	16,961	17,261	18,047	615,414	554,284	505,083	506,335	561,605
Netherlands - - - - -	180	202	253	260	101	5,609	7,006	7,758	7,822	2,983
Belgium - - - - -	268	223	321	367	78	11,332	9,571	12,690	14,965	3,001
France - - - - -	1,030	1,044	934	760	770	33,615	35,301	34,094	22,707	23,199
Other Foreign Countries - - - - -	289	178	206	149	213	10,990	7,597	9,078	5,366	8,655
Total from Foreign Countries - - - - -	22,086	19,909	18,675	18,797	19,209	676,960	613,759	568,703	557,695	599,448
Total from British Possessions - - - - -	15	23	12	5	6	445	964	547	227	190
TOTAL - - - - -	22,101	19,932	18,687	18,802	19,215	677,405	614,723	569,250	557,922	599,638
„ Unenumerated (III. O):										
	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Germany - - - - -	327,250	355,625	333,349	572,195	126,230	50,216	43,270	46,507	48,607	40,723
Belgium - - - - -	17,167	7,638	11,383	3,150	2,150	3,698	1,663	1,812	1,117	1,565
France - - - - -	10,144	9,399	8,544	6,271	5,917	14,638	13,526	15,133	11,522	9,821
Switzerland - - - - -	2,401	814	2,194	1,027	1,532	2,232	2,289	2,261	1,671	1,255
Italy - - - - -	7,967	9,530	5,480	6,822	6,468	3,449	3,525	2,278	2,027	2,654
United States of America - - - - -	932	1,491	1,781	1,003	553	2,760	2,396	951	831	660
Other Foreign Countries - - - - -	695	5,123	218	1,956	2,420	1,506	531	623	1,649	1,401
Total from Foreign Countries - - - - -	366,566	390,120	412,949	592,424	145,270	78,499	72,200	69,585	87,424	58,079
Total from British Possessions - - - - -	52	—	21	34	29	50	—	221	89	194
TOTAL - - - - -	366,608	390,120	412,970	592,508	145,299	78,549	72,200	69,806	87,513	58,273

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
CARRIAGES, WAGONETTES, CARTS, &c.—continued:										
„ Unenumerated, Parts thereof (III. N):						£	£	£	£	£
Russia - - - - -	—	—	—	—	—	1,932	1,911	1,979	1,858	2,022
Sweden - - - - -	—	—	—	—	—	923	2,678	1,575	3,422	8,081
Germany - - - - -	—	—	—	—	—	9,772	9,381	6,979	8,453	15,341
Netherlands - - - - -	—	—	—	—	—	610	1,988	1,973	386	231
Belgium - - - - -	—	—	—	—	—	1,515	2,561	3,353	3,752	4,149
United States of America - - - - -	—	—	—	—	—	70,832	67,418	68,618	62,457	82,965
Other Foreign Countries - - - - -	—	—	—	—	—	4,375	3,031	3,647	1,692	1,056
Total from Foreign Countries - - - - -	—	—	—	—	—	89,959	89,468	88,124	82,020	113,845
Total from British Possessions - - - - -	—	—	—	—	—	168	1,343	949	210	60
TOTAL - - - - -	—	—	—	—	—	90,127	90,811	89,073	82,230	113,905
CATTLE AND OTHER ANIMAL FOODS:										
„ Containing Molasses: (IV.):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Germany - - - - -	390	—	—	820	19,277	98	—	—	156	4,074
Netherlands - - - - -	8,239	2,778	36,503	79,577	111,859	1,667	612	7,466	16,530	23,310
Java - - - - -	81,949	142,250	214,423	230,713	221,843	15,952	28,724	45,310	46,387	42,783
Belgium - - - - -	13,962	8,449	4,835	4,690	1,400	4,155	2,659	1,570	1,521	363
United States of America - - - - -	1,500	—	—	546	—	413	—	—	103	—
Other Foreign Countries - - - - -	3,375	340	11,200	4,272	101	841	72	2,423	951	36
Total from Foreign Countries - - - - -	109,415	153,817	266,961	320,618	354,480	23,126	32,067	56,774	65,648	70,566
British Guiana - - - - -	230,235	151,312	211,674	169,329	135,067	46,891	30,915	43,030	34,751	27,647
Other British Possessions - - - - -	5,496	4,200	4,594	26,444	6,117	1,114	842	930	4,807	1,198
Total from British Possessions - - - - -	235,731	155,512	216,268	195,773	141,184	48,005	31,757	43,960	39,558	28,845
TOTAL - - - - -	345,146	309,329	483,229	516,391	495,664	71,131	63,824	100,734	105,206	99,411
„ Other Sorts, unsweetened, except Oil-seed Cake and Corn Offals (IV.):	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Germany - - - - -	440	1,112	854	1,707	4,236	763	4,086	3,354	6,165	14,773
Netherlands - - - - -	3,144	2,621	2,330	3,877	4,752	10,398	7,391	6,916	9,272	15,544
Java - - - - -	—	165	14,327	1,324	—	—	774	76,362	9,430	—
Belgium - - - - -	46	264	654	2,210	4,279	277	700	3,373	11,883	26,300
France - - - - -	1,160	3,638	4,538	6,121	4,730	4,405	11,693	13,279	16,416	15,781
United States of America - - - - -	3,049	3,283	2,397	5,996	3,911	27,866	28,669	21,085	40,384	29,804
Argentine Republic - - - - -	405	483	1,297	1,175	609	3,157	4,709	13,112	11,136	7,254
Other Foreign Countries - - - - -	464	1,813	1,285	946	936	2,333	6,334	5,462	5,689	5,248
Total from Foreign Countries - - - - -	8,708	13,379	27,082	23,356	23,453	49,199	64,411	142,943	110,425	114,704
British East Indies - - - - -	4,564	5,467	5,701	2,057	1,588	28,362	32,819	34,937	14,217	9,245
Other British Possessions - - - - -	710	576	203	848	3,412	3,825	2,873	1,111	5,856	7,784
Total from British Possessions - - - - -	5,274	6,043	5,904	2,905	5,000	32,217	35,692	36,038	19,573	17,029
TOTAL - - - - -	13,982	19,422	33,586	26,261	28,453	81,416	100,103	178,981	129,998	131,733
CEMENT for Building and Engineer- ing purposes (III. O):										
Denmark (including Faroe Islands) - - - - -	1,963	1,047	1,137	1,401	3,086	2,488	1,133	1,447	1,667	3,623
Germany - - - - -	4,458	2,726	2,334	4,346	5,404	9,992	4,902	4,011	6,456	7,778
Netherlands - - - - -	1,912	738	233	259	294	4,516	1,422	313	322	384
Belgium - - - - -	105,545	88,736	60,153	54,059	64,902	132,588	107,098	74,145	68,217	81,564
France - - - - -	287	393	174	122	192	398	496	440	294	616
Other Foreign Countries - - - - -	207	44	203	434	488	900	172	273	1,223	2,234
TOTAL - - - - -	114,372	93,684	64,234	60,671	74,366	150,882	115,223	80,634	78,179	96,199
CHEESE (except Margarine Cheese) (I. C (1)):										
Netherlands - - - - -	241,060	279,013	285,329	231,832	207,917	582,372	652,807	669,327	567,360	525,097
Belgium - - - - -	1,674	401	325	854	618	5,416	1,246	1,048	2,867	1,951
France - - - - -	19,317	22,522	23,404	20,911	17,977	64,631	73,060	75,853	65,288	55,501
Switzerland - - - - -	9,977	9,517	10,793	11,454	11,064	33,319	31,237	35,586	38,695	37,385
Italy - - - - -	88,691	80,372	77,228	85,267	75,157	289,646	260,310	251,954	275,658	247,258
United States of America - - - - -	125,358	138,492	54,617	35,247	150,321	365,658	393,615	154,588	105,400	432,119
Other Foreign Countries - - - - -	2,544	1,452	2,669	3,188	1,509	5,893	3,732	6,940	8,451	3,798
Total from Foreign Countries - - - - -	488,621	531,769	454,365	391,753	464,563	1,346,935	1,421,057	1,195,796	1,063,669	1,303,109
Australia - - - - -	8,515	757	599	3,710	12,602	10,833	2,212	1,676	10,772	36,749
New Zealand - - - - -	192,304	264,995	368,531	453,735	397,345	586,683	801,131	1,113,714	1,310,550	1,209,549
Canada - - - - -	1,687,789	1,503,565	1,566,546	1,607,064	1,473,275	4,961,043	4,459,798	4,513,539	4,424,806	4,500,515
Other British Possessions - - - - -	4	—	49	23	41	15	5	138	79	120
Total from British Possessions - - - - -	1,883,612	1,774,317	1,935,725	2,064,587	1,883,763	5,558,574	5,263,146	5,634,067	5,746,207	5,836,933
TOTAL - - - - -	2,372,233	2,306,086	2,390,090	2,456,340	2,348,326	6,905,509	6,684,203	6,829,863	6,809,876	7,140,042

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—continued.

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
DYE WOODS —continued :										
„ Unenumerated (III. J) :	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Germany - - - - -	220	174	318	45	273	1,066	1,042	2,224	413	1,886
France - - - - -	55	135	39	30	46	1,661	1,373	1,028	794	352
United States of America - - - - -	71	196	114	141	82	398	1,417	438	584	451
Mexico - - - - -	415	251	65	116	452	2,593	1,323	328	748	2,667
Nicaragua - - - - -	917	1,051	1,798	2,070	1,291	4,722	4,862	8,140	11,422	6,543
Argentine Republic - - - - -	22	—	148	75	1,060	90	—	444	1,423	5,000
Other Foreign Countries - - - - -	1,857	335	349	1,091	584	9,114	2,874	2,896	4,658	3,305
Total from Foreign Countries - - -	3,557	2,142	2,831	3,568	3,788	19,644	12,896	14,998	20,042	20,154
British India - - - - -	797	822	699	576	484	11,999	15,340	17,703	12,984	11,220
Ceylon and Dependencies - - - - -	451	234	75	107	167	5,062	1,517	392	1,086	1,457
British West India Islands - - - - -	843	213	591	735	339	3,824	934	2,520	3,146	1,883
Other British Possessions - - - - -	229	45	14	232	1,085	1,883	176	79	1,497	6,327
Total from British Possessions - - -	2,320	1,314	1,379	1,650	2,075	22,768	17,967	20,694	18,713	20,887
TOTAL - - - - -	5,877	3,456	4,210	5,218	5,863	42,412	30,863	35,692	38,755	40,541
EGGS (I. C (1)) :	Gt.Hunds.	Gt.Hunds.	Gt.Hunds.	Gt.Hunds.	Gt.Hunds.	£	£	£	£	£
Russia - - - - -	7,261,275	7,238,483	8,154,635	9,217,586	10,041,890	2,423,978	2,584,712	2,929,487	3,282,194	3,796,408
Sweden - - - - -	288,214	278,971	259,373	310,334	344,289	123,355	124,649	125,787	146,356	157,067
Denmark (including Faroe Islands) - - -	3,665,290	3,787,670	3,428,200	3,647,139	3,992,986	1,711,823	1,765,620	1,698,329	1,732,107	2,030,607
Germany - - - - -	1,456,083	1,194,012	612,817	507,307	577,545	541,275	431,274	255,003	200,860	233,142
Netherlands - - - - -	302,192	413,217	615,669	592,821	607,364	107,304	164,086	275,561	259,770	282,805
Belgium - - - - -	181,028	116,930	72,080	85,407	49,222	51,720	45,732	30,201	37,289	20,298
France - - - - -	774,467	951,285	1,047,850	907,599	652,036	325,389	410,714	475,335	417,545	303,515
Portugal - - - - -	12,770	14,205	12,513	9,852	12,528	5,071	6,901	5,366	5,116	5,694
Spain - - - - -	10,130	15,624	25,452	21,254	23,137	4,831	6,458	12,585	9,792	9,709
Italy - - - - -	1,462,125	1,316,362	875,758	746,841	771,107	650,741	579,938	400,450	350,238	366,859
Austria-Hungary - - - - -	2,299,529	1,987,671	1,300,246	1,370,121	1,022,554	872,587	752,723	547,005	555,998	428,668
Turkey, Asiatic - - - - -	30,966	21,638	10,256	15,038	11,100	10,038	6,541	3,760	5,111	3,220
Egypt - - - - -	499,295	407,458	718,758	583,226	687,335	153,167	127,053	246,511	186,628	222,353
Morocco - - - - -	212,113	397,639	565,921	323,216	214,960	75,168	143,920	223,306	104,394	84,967
United States of America - - - - -	27,645	6,797	1,195	2	9,349	13,065	3,161	597	4	4,423
Other Foreign Countries - - - - -	3,730	3,744	4,947	4,488	17,074	1,103	1,243	1,780	1,619	6,268
Total from Foreign Countries - - -	18,436,852	18,151,706	17,705,670	18,342,231	19,034,476	7,075,665	7,154,725	7,231,363	7,295,021	7,956,498
Canada - - - - -	112,186	50,393	3,984	1,860	14,709	51,423	24,838	2,182	1,097	7,465
Other British Possessions - - - - -	18,863	7,971	777	46	8,712	8,442	3,549	387	27	3,592
Total from British Possessions - - -	131,049	58,364	4,761	1,906	23,421	59,865	28,387	2,569	1,124	11,057
TOTAL - - - - -	18,567,901	18,210,070	17,710,431	18,344,137	19,057,897	7,135,530	7,183,112	7,233,932	7,296,145	7,967,555
ELECTRICAL GOODS AND APPARATUS (other than Machinery and Telegraph and Telephone Wire) :										
„ Electric Wires and Cables, Insulated :										
„ „ Rubber insulated (not being Telegraph and Telephone Cables) (III. D) :										
Germany - - - - -	<i>Electrical Goods and Apparatus: Electric Wires and Cables, Rubber insulated, are entered by value only.</i>					60,783	40,161	81,062	120,896	42,046
Netherlands - - - - -						4,588	1,700	850	605	421
Belgium - - - - -						7,903	8,572	22,435	15,507	16,036
Italy - - - - -						7,951	15,346	10,698	20,834	6,862
United States of America - - - - -						2,083	1,129	585	1,541	2,070
Other Foreign Countries - - - - -						2,466	4,597	3,558	9,892	15,084
TOTAL - - - - -	—	—	—	—	—	85,774	71,505	119,188	169,275	82,519
„ „ Insulations other than Rubber (not being Telegraph and Telephone Cables) (III. D) :										
Germany - - - - -	<i>Electrical Goods and Apparatus: Electric Wires and Cables, Insulations other than Rubber, are entered by value only.</i>					62,448	92,757	60,700	22,490	27,329
France - - - - -						240	123	456	1,155	687
United States of America - - - - -						2,362	2,265	4,984	1,617	3,688
Other Foreign Countries - - - - -						9,091	8,085	11,200	7,170	6,425
Total from Foreign Countries - - -						74,141	103,230	77,340	32,432	38,129
Total from British Possessions - - -	—	—	—	—	—	—	—	—	200	—
TOTAL - - - - -	—	—	—	—	—	74,141	103,230	77,340	32,632	38,129

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
HATS AND BONNETS, Trimmed and Untrimmed—continued:										
„ Other Sorts—continued:	Dozs.	Dozs.	Dozs.	Dozs.	Dozs.	£	£	£	£	£
China (exclusive of Hong Kong, Macão and Wei-hai-Wei)	49,535	30,008	55,429	199,783	145,006	7,389	4,688	10,904	21,044	12,653
United States of America	1,542	3,455	13,421	8,151	4,273	5,186	13,257	7,029	15,924	9,619
Philippine Islands and Guam	14,248	5,925	6,997	19,580	1,810	5,401	2,408	2,859	8,165	1,847
Colombia	11,135	12,709	8,183	16,001	24,343	38,987	45,239	29,563	52,243	74,172
Ecuador	16,524	21,507	37,864	42,663	61,636	67,874	78,199	124,211	138,955	183,513
Peru	6,663	3,988	8,324	12,776	15,564	44,888	27,145	43,169	69,610	66,657
Other Foreign Countries	4,925	12,288	5,162	24,413	14,664	2,080	3,698	2,601	6,038	6,797
Total from Foreign Countries	266,740	213,383	337,783	497,085	405,569	381,117	330,935	431,972	520,713	606,549
Total from British Possessions	6,397	2,786	3,368	3,255	7,004	3,673	1,614	3,907	2,673	5,228
TOTAL	273,137	216,169	341,151	500,340	412,573	384,790	332,599	435,879	523,386	611,777
HAY (II. K):	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Sweden	940	628	1,535	138	8	4,200	2,413	5,490	487	32
Norway	1,398	3,165	6,009	11,258	418	5,303	12,236	22,990	45,405	1,673
Denmark (including Faroe Islands)	2,442	1,647	2,345	839	—	9,386	5,731	8,290	2,900	—
Netherlands	33,586	2,496	29	15	—	106,643	7,823	106	50	—
Belgium	4,041	109	—	—	—	13,005	427	—	—	—
France	22,731	3,141	—	—	—	76,065	10,091	—	—	—
Algeria	7,280	3,779	—	—	—	24,969	13,017	—	—	—
United States of America	1,970	2,258	7,929	11,964	21,835	7,894	7,719	30,318	46,191	84,728
Chile	1,738	2,523	—	375	100	7,992	9,121	—	1,782	475
Other Foreign Countries	3,191	833	—	1	—	11,399	3,225	—	2	—
Total from Foreign Countries	79,317	20,579	17,847	24,590	22,361	266,856	71,853	67,194	96,317	86,908
Canada	18,040	21,692	43,604	74,410	99,136	71,162	82,906	168,198	292,788	391,022
Other British Possessions	67	50	36	15	19	418	266	216	77	98
Total from British Possessions	18,107	21,742	43,640	74,425	99,155	71,580	83,172	168,414	292,865	391,120
TOTAL	97,424	42,321	61,487	99,015	121,516	338,436	155,025	225,608	389,082	478,028
HEMP:	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
„ Dressed or Undressed (II. G):										
Russia	14,939	14,230	11,084	9,642	12,579	431,910	398,467	301,987	279,983	384,976
Germany	2,290	1,523	2,731	2,934	2,402	68,033	45,708	67,481	76,861	64,854
Belgium	59	93	337	136	418	1,864	1,986	8,274	3,770	9,186
France	69	357	116	25	48	2,057	9,262	2,915	743	1,284
Italy	10,462	8,133	10,143	10,298	10,343	399,366	289,269	342,527	350,250	372,416
Austria-Hungary	917	339	272	204	465	32,700	11,776	8,377	6,544	17,053
United States of America	194	241	312	1,266	438	5,766	5,655	7,992	29,221	9,803
Philippine Islands and Guam	50,884	54,396	58,532	64,106	75,449	1,910,312	1,454,658	1,374,896	1,520,199	1,647,542
Mexico	664	1,089	293	961	1,115	21,222	26,103	5,352	20,285	22,983
Other Foreign Countries	256	215	278	620	2,223	5,794	5,205	6,464	16,994	63,317
Total from Foreign Countries	80,734	80,616	84,149	90,192	105,480	2,879,029	2,243,089	2,126,265	2,304,550	2,593,414
Mauritius and Dependencies	2,827	2,139	1,796	1,656	1,775	79,817	48,390	42,059	41,424	41,202
British India	14,713	12,267	13,942	13,934	11,735	272,999	217,672	242,017	240,020	213,555
Hong Kong	1,135	579	365	683	396	42,822	14,115	8,218	15,091	9,246
New Zealand	23,225	15,467	9,371	17,347	15,073	745,966	410,535	215,387	425,733	311,850
Other British Possessions	589	456	285	191	226	16,631	10,347	6,869	4,377	3,962
Total from British Possessions	42,539	30,908	25,759	33,811	29,205	1,158,235	701,559	514,550	726,645	579,815
TOTAL	123,273	111,524	109,908	124,003	134,685	4,037,264	2,949,643	2,640,815	3,031,495	3,173,229
„ Tow or Codilla (II. G):	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Russia	4,111	2,632	2,393	2,084	1,323	85,929	57,377	51,083	44,498	40,538
Germany	392	251	245	225	343	7,325	5,121	5,032	4,653	6,132
Italy	797	338	119	166	393	19,754	8,829	2,875	3,622	8,759
Other Foreign Countries	305	338	208	196	510	5,901	7,371	4,432	3,769	8,246
Total from Foreign Countries	5,605	3,559	2,965	2,671	3,069	119,409	73,698	63,472	56,542	63,675
British India	159	152	386	180	305	3,033	2,516	5,867	2,567	4,297
New Zealand	5,423	2,008	1,473	2,842	2,206	77,843	22,139	13,846	31,133	26,134
Other British Possessions	64	183	67	37	40	1,622	2,270	716	432	614
Total from British Possessions	5,651	2,343	1,926	3,059	2,551	82,498	26,925	20,429	34,132	31,045
TOTAL	11,256	5,902	4,891	5,730	5,620	201,907	105,623	83,901	90,724	94,720
„ Yarn (III. H (4)):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Russia	17,262	16,632	13,082	9,679	9,401	28,367	27,777	21,644	16,815	16,903
Germany	3,922	2,230	3,237	4,540	5,132	7,645	5,078	8,715	12,597	13,171
Netherlands	26,565	14,392	14,279	13,042	18,577	53,642	26,130	22,141	19,081	25,391
Belgium	18,042	13,396	18,299	25,570	25,667	41,939	32,775	42,373	55,474	56,689

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
STONES and SLATES—continued :										
„ Slates for roofing purposes (III. O) :	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Belgium - - - - -	1,956	834	778	1,408	770	9,159	3,231	3,077	5,336	3,326
France - - - - -	25,879	23,029	23,059	28,692	23,391	85,326	70,807	69,470	85,897	70,868
Portugal - - - - -	4,592	2,423	2,420	4,380	2,340	14,787	8,777	9,574	14,898	10,715
United States of America - - - - -	4,085	3,576	5,286	4,690	5,801	17,870	15,908	22,999	20,259	24,112
Other Foreign Countries - - - - -	1,011	779	332	480	931	3,992	2,655	980	2,371	4,338
Total from Foreign Countries - - - - -	37,523	30,641	31,875	39,650	33,733	131,134	101,378	106,100	128,761	113,359
Total from British Possessions - - - - -	—	—	3	252	—	—	—	15	504	—
TOTAL - - - - -	37,523	30,641	31,878	39,902	33,733	131,134	101,378	106,115	129,265	113,359
„ Unenumerated * (III. O) :	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Russia - - - - -	—	7,536	2	9	101	—	10,274	18	92	560
Sweden - - - - -	—	46,185	237	594	616	—	66,992	418	1,517	1,524
Norway - - - - -	—	80,877	883	1,064	943	—	112,304	2,294	2,912	1,554
Germany - - - - -	—	47,255	21,556	13,824	19,906	—	37,560	29,807	27,693	33,231
Netherlands - - - - -	—	52,507	15,941	15,171	18,516	—	35,758	15,272	13,405	13,918
Belgium - - - - -	—	236,661	40,537	30,639	22,488	—	197,685	24,724	19,218	15,941
France - - - - -	—	156,787	69,377	74,357	81,502	—	98,372	45,490	47,926	53,239
Portugal - - - - -	—	8,926	8,811	8,442	10,654	—	23,307	30,065	30,611	36,773
Italy - - - - -	—	35,425	4,475	4,965	5,314	—	206,478	20,825	19,559	21,274
Austria-Hungary - - - - -	—	1,293	1,938	966	1,134	—	5,771	5,394	4,542	5,156
Greece - - - - -	—	16,679	14,342	9,172	11,860	—	35,851	26,324	23,299	24,052
Turkey - - - - -	—	9,740	6,513	9,368	8,956	—	48,502	33,430	42,318	40,599
United States of America - - - - -	—	513	263	445	855	—	8,352	4,861	21,128	10,454
Other Foreign Countries - - - - -	—	1,590	3,018	1,908	1,508	—	3,880	7,989	7,488	5,467
Total from Foreign Countries - - - - -	—	701,484	187,903	170,924	184,353	—	896,086	246,911	262,208	263,741
Channel Islands - - - - -	—	508,023	7,109	1,477	832	—	263,102	3,566	552	313
British India - - - - -	—	4,863	631	1,739	331	—	11,200	5,007	7,231	1,217
Other British Possessions - - - - -	—	156	64	15	131	—	1,055	1,515	742	2,338
Total from British Possessions - - - - -	—	513,042	7,804	3,231	1,344	—	275,357	10,388	8,525	4,368
TOTAL - - - - -	—	1,214,526	195,707	174,155	185,697	—	1,171,443	257,299	270,733	268,109
STRAW (II. K) :	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Denmark (including Faroe Islands) - - - - -	59	3,229	9,629	5,957	—	145	7,372	20,700	14,142	—
Netherlands - - - - -	5,141	1,257	443	348	505	12,644	3,046	1,237	1,014	1,515
Belgium - - - - -	693	377	450	498	470	1,978	1,096	1,364	1,548	1,584
France - - - - -	52,261	10,917	59	111	10	111,293	23,319	128	345	34
Other Foreign Countries - - - - -	569	158	697	2,467	6,766	1,134	311	1,763	6,356	16,589
Total from Foreign Countries - - - - -	58,723	15,933	11,278	9,331	7,751	127,194	35,144	25,192	23,405	19,722
Total from British Possessions (Canada) - - - - -	2	5	147	418	642	5	11	577	1,153	1,535
TOTAL - - - - -	58,725	15,943	11,425	9,799	8,393	127,199	35,155	25,769	24,558	21,257
STRAW ENVELOPES, for BOTTLES (III. O) :	Gross.	Gross.	Gross.	Gross.	Gross.	£	£	£	£	£
Netherlands - - - - -	422,242	338,175	335,245	427,951	528,838	37,506	30,171	29,529	38,050	47,650
France - - - - -	402,435	276,730	314,610	335,918	312,266	38,578	26,179	29,338	30,173	30,212
Other Foreign Countries - - - - -	46,779	38,218	50,767	61,670	45,023	3,859	3,421	3,800	4,860	3,736
TOTAL - - - - -	871,456	653,123	700,622	825,439	886,127	79,943	59,771	62,667	73,083	81,598
TALC, FRENCH CHALK, STEATITE, MINERAL WHITE, SILICA AND SOAPSTONE (II. K) :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
France - - - - -	114,087	102,074	110,095	119,060	131,079	18,975	18,621	19,427	20,991	24,980
Italy - - - - -	34,329	43,579	34,722	30,337	44,835	8,209	11,394	8,718	8,599	12,194
Austria-Hungary - - - - -	19,181	14,431	12,610	12,594	11,437	4,992	3,597	3,123	3,490	3,630
United States of America - - - - -	10,798	2,630	2,323	6,317	6,605	3,381	1,297	774	1,701	2,071
Other Foreign Countries - - - - -	14,825	8,868	9,072	12,728	16,469	4,429	2,857	2,535	3,885	3,363
Total from Foreign Countries - - - - -	193,220	171,582	168,822	181,036	210,425	39,986	37,766	34,577	38,666	46,238
Total from British Possessions - - - - -	—	979	8,294	14,440	11,731	—	395	1,831	3,519	2,599
TOTAL - - - - -	193,220	172,561	177,116	195,476	222,156	39,986	38,161	36,408	42,185	48,837
TALLOW, UNREFINED, and STEARINE (II. H) :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Germany - - - - -	13,576	9,322	10,523	12,281	14,181	20,101	13,233	16,025	17,755	20,718
Netherlands - - - - -	7,877	9,400	11,019	21,213	18,469	14,407	17,915	19,666	36,157	30,427
Belgium - - - - -	45,448	55,623	54,203	50,340	52,962	82,965	94,070	89,322	89,997	92,931
France - - - - -	47,290	36,605	40,134	43,756	31,056	86,335	70,115	83,097	93,005	53,305
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -	75,628	56,038	119,064	74,266	21,716	120,737	79,665	162,974	117,791	35,354
United States of America - - - - -	486,365	427,915	263,385	43,089	140,824	762,853	597,821	339,239	77,411	220,480
Uruguay - - - - -	44,955	73,209	50,059	173,829	51,464	77,951	105,904	76,688	304,907	90,460
Argentine Republic - - - - -	321,179	447,498	429,637	412,628	437,519	558,357	634,869	661,252	725,438	741,931
Other Foreign Countries - - - - -	8,011	8,426	8,366	17,148	12,308	12,280	13,205	12,490	29,032	10,023
Total from Foreign Countries - - - - -	1,050,329	1,124,036	986,390	853,550	780,499	1,735,986	1,676,847	1,511,253	1,491,493	1,304,729

Included in "Stones, Slabs, &c.," prior to 1908.

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
HEMP —continued :										
„ Yarn —continued :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
France - - - - -	3,301	673	402	763	20	7,855	1,946	1,198	1,572	40
Italy - - - - -	25,249	16,519	24,548	22,432	27,248	66,648	42,302	63,801	59,644	73,307
Austria-Hungary - - - - -	880	629	558	696	785	2,420	1,298	1,272	1,165	2,118
Other Foreign Countries - - - - -	240	109	11	39	5,868	486	184	15	97	8,777
Total from Foreign Countries - - - - -	95,461	64,580	74,416	76,761	92,698	208,992	137,490	161,159	166,445	195,396
Total from British Possessions - - - - -	116	—	—	198	162	467	—	—	142	120
TOTAL - - - - -	95,577	64,580	74,416	76,959	92,860	209,459	137,490	161,159	166,587	195,516
„ Unenumerated vegetable substances, applicable to the same uses as Hemp or Flax (except Coir Fibre)* (II. G):	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Germany - - - - -	199	164	191	155	137	8,356	4,335	4,848	3,949	3,234
Belgium - - - - -	23	39	20	6	80	282	249	310	172	1,574
France - - - - -	200	196	317	335	318	5,123	8,498	14,014	18,989	17,295
Algeria - - - - -	698	995	1,108	1,431	1,087	4,479	6,892	6,320	10,171	8,057
Madagascar - - - - -	68	283	310	243	462	2,192	6,978	5,586	5,123	10,539
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -	292	109	128	166	173	7,731	3,335	2,882	4,683	4,634
United States of America - - - - -	426	193	413	21	45	14,160	4,905	10,280	510	958
Mexico - - - - -	1,066	836	259	533	313	32,916	20,515	5,731	11,815	7,612
Other Foreign Countries - - - - -	231	374	196	142	368	2,514	3,552	2,636	3,781	5,459
Total from Foreign Countries - - - - -	3,208	3,189	2,942	3,032	2,983	77,758	59,262	52,607	59,193	59,362
Mauritius and Dependencies - - - - -	188	44	103	118	75	3,150	670	1,625	2,596	1,351
British India - - - - -	425	191	176	232	600	7,969	2,937	2,113	2,419	8,373
Ceylon and Dependencies - - - - -	1,234	1,798	1,472	1,745	1,729	11,215	12,102	7,653	12,182	15,205
Other British Possessions - - - - -	74	141	54	205	11	1,799	2,941	937	4,543	151
Total from British Possessions - - - - -	1,921	2,174	1,805	2,300	2,415	24,133	18,653	12,328	21,740	25,080
TOTAL - - - - -	5,129	5,363	4,747	5,332	5,398	101,891	77,915	64,935	80,933	84,442
HIDES, Raw, and pieces thereof:										
„ Dry (II. I):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Russia - - - - -	53,714	37,062	50,342	33,424	44,195	182,689	173,161	193,660	139,095	172,506
Sweden - - - - -	529	842	1,738	2,317	481	4,041	4,469	6,575	8,886	2,107
Norway - - - - -	3,455	5,329	4,357	3,281	3,465	12,792	20,125	16,203	11,814	13,809
Denmark (including Faroe Islands) - - - - -	573	1,674	4,750	2,064	1,315	2,414	6,749	19,943	7,002	4,469
Germany - - - - -	7,627	11,165	9,791	9,555	11,745	27,692	39,858	38,609	35,423	41,789
Netherlands - - - - -	15,229	20,700	21,861	21,057	18,600	61,060	73,180	76,556	71,395	59,041
Java - - - - -	1,671	4,665	4,379	3,019	2,582	6,315	15,408	15,587	12,358	9,963
Belgium - - - - -	4,526	2,434	1,887	2,241	2,004	13,608	7,818	5,360	7,535	7,061
France - - - - -	25,155	16,940	22,924	19,765	21,170	88,228	50,123	69,347	68,197	72,631
Madagascar - - - - -	23,852	16,999	7,196	13,327	11,727	65,732	40,639	19,425	38,891	34,305
French Indo-China - - - - -	1,209	3,756	6,299	6,746	10,321	4,870	10,939	16,372	16,814	27,884
Canary Islands - - - - -	764	503	762	30	384	2,723	1,465	2,403	70	1,446
Italy - - - - -	1,773	915	2,293	1,950	1,277	7,555	3,516	8,692	8,079	5,173
Egypt - - - - -	1,685	1,249	3,254	4,675	1,364	5,770	2,881	8,414	13,525	3,656
Siam - - - - -	5,144	1,978	810	2,532	3,743	13,189	5,106	1,903	7,045	14,674
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -	14,993	18,244	15,659	23,564	9,814	58,476	55,949	54,833	106,035	32,436
United States of America - - - - -	2,270	1,930	4,877	2,372	7,655	8,587	5,585	16,247	10,983	31,412
Colombia - - - - -	3,359	4,020	11,723	13,851	15,864	16,684	14,431	47,625	59,580	72,055
Ecuador - - - - -	2,021	2,144	11,008	10,671	4,367	8,008	7,312	46,843	50,250	18,667
Peru - - - - -	1,007	1,194	1,576	1,223	1,229	3,437	3,501	5,285	4,443	3,655
Chile - - - - -	1,250	436	642	1,104	1,129	3,681	1,789	1,967	3,369	3,216
Brazil - - - - -	20,277	11,416	17,298	16,521	13,645	81,034	46,405	68,776	71,445	58,604
Uruguay - - - - -	823	498	1,249	164	75	3,891	1,575	5,382	850	349
Argentine Republic - - - - -	6,443	6,527	1,691	2,663	431	26,007	22,390	7,343	9,374	2,823
Other Foreign Countries - - - - -	8,502	5,320	11,133	11,803	13,167	29,562	19,539	36,943	44,684	43,085
Total from Foreign Countries - - - - -	207,851	177,940	219,499	214,969	201,749	738,045	633,913	790,193	807,092	736,316
Cape of Good Hope - - - - -	25,919	26,212	30,956	26,954	34,561	104,997	97,511	115,926	111,336	139,257
Natal - - - - -	22,549	26,158	38,318	47,479	38,303	94,285	105,531	142,156	187,120	150,917
British East Africa - - - - -	5,324	7,945	16,331	22,364	19,614	21,793	26,055	58,921	86,410	74,637
Aden and Dependencies - - - - -	2,437	2,089	6,193	9,163	7,467	10,380	6,352	19,993	31,460	26,685
British India - - - - -	87,901	53,879	88,596	118,186	90,276	342,535	173,755	280,794	389,111	302,319
Straits Settlements and Dependencies, including Labuan - - - - -	42,480	32,259	37,631	39,763	33,147	134,783	84,943	95,722	108,088	90,262
Australia - - - - -	6,209	21,407	24,966	28,598	26,362	17,793	62,792	80,379	104,550	94,898
British West India Islands - - - - -	334	1,284	207	1,515	289	1,233	3,650	575	3,883	803
Other British Possessions - - - - -	5,260	8,202	5,302	7,905	10,036	18,726	20,617	17,430	26,804	33,442
Total from British Possessions - - - - -	198,463	179,435	249,494	301,927	260,605	746,525	581,206	811,901	1,048,712	918,240
TOTAL - - - - -	406,314	357,375	468,993	516,896	462,354	1,484,570	1,215,119	1,602,094	1,855,804	1,654,556

* Includes "Coir Fibre" from 1911.

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
HIDES, Raw, and pieces thereof—cont. :										
„ Wet (II. I):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Russia - - - - -	19,448	12,839	36,156	55,955	20,563	44,821	32,300	97,118	145,667	55,894
Sweden - - - - -	18,009	18,494	24,011	13,006	12,080	44,682	49,198	69,711	39,912	31,680
Norway - - - - -	12,958	16,026	24,429	17,608	11,880	32,805	41,724	61,343	46,681	30,701
Denmark (including Faroe Islands) - - - - -	9,224	17,570	24,754	18,031	10,127	23,430	42,658	64,186	47,593	27,867
Germany - - - - -	34,430	80,899	97,078	75,584	36,515	85,378	200,610	258,039	216,083	106,461
Netherlands - - - - -	24,645	38,510	53,780	26,917	18,531	69,615	100,738	156,122	79,725	53,876
Belgium - - - - -	37,077	48,896	44,772	28,993	25,749	101,343	125,096	111,982	83,481	73,853
France - - - - -	58,609	52,900	57,005	42,027	50,486	162,117	161,180	185,599	155,307	157,239
Switzerland - - - - -	401	894	3,101	863	143	1,247	2,571	11,657	3,453	372
Portugal - - - - -	21,237	26,340	26,053	20,783	15,488	61,806	64,830	78,178	65,114	46,065
Spain - - - - -	2,142	—	1,595	926	267	6,538	—	4,456	3,274	734
Italy - - - - -	100,612	121,065	152,952	128,750	75,267	357,670	392,478	541,762	470,154	282,260
Austria-Hungary - - - - -	131	187	408	1,346	891	515	440	1,362	4,747	1,946
United States of America - - - - -	5,803	11,202	3,507	15,134	17,119	13,757	20,310	5,963	38,833	42,376
Chile - - - - -	1,594	3,963	3,240	11,431	7,770	4,722	10,055	9,264	36,161	22,055
Brazil - - - - -	204	254	—	600	44	621	593	—	1,802	120
Uruguay - - - - -	3,407	9,761	9,490	4,038	3,432	11,282	25,491	32,067	15,962	11,565
Argentine Republic - - - - -	118,381	99,150	45,698	121,144	186,589	389,612	289,113	163,590	438,619	682,241
Other Foreign Countries - - - - -	1,749	3,795	4,067	17,546	20,806	5,166	11,017	10,827	47,554	53,483
Total from Foreign Countries - - - - -	470,121	561,745	612,091	601,242	513,747	1,416,627	1,570,402	1,863,226	1,940,122	1,680,788
Gibraltar - - - - -	2,747	2,566	4,204	3,611	1,779	6,961	5,499	9,919	9,511	4,671
Malta and Gozo - - - - -	382	381	2,271	823	1,404	1,010	713	4,432	2,338	4,032
Cape of Good Hope - - - - -	4,057	4,160	5,913	5,991	7,785	10,897	11,132	14,792	16,521	22,108
Natal - - - - -	14,631	19,203	31,302	33,330	38,275	38,816	48,240	73,205	91,869	99,134
British India - - - - -	5,622	4,754	9,604	11,685	8,058	13,657	10,697	24,636	31,418	20,704
Australia - - - - -	30,117	44,567	57,927	31,743	69,807	81,681	98,936	156,861	262,152	209,716
Canada - - - - -	3,270	32,339	1,128	10,088	6,861	9,903	62,145	3,204	26,326	16,597
British West India Islands - - - - -	10,666	7,031	7,135	8,121	7,971	28,656	17,593	18,086	22,678	22,030
British Guiana - - - - -	1,052	1,331	1,368	1,097	752	2,540	3,850	4,001	3,635	2,087
Other British Possessions - - - - -	3,274	2,959	4,659	6,384	3,566	8,971	7,642	13,612	20,458	10,020
Total from British Possessions - - - - -	75,818	119,341	125,511	162,873	144,208	203,092	266,447	522,748	476,906	411,099
TOTAL - - - - -	545,939	681,086	737,602	764,155	658,045	1,619,719	1,836,849	2,185,974	2,417,028	2,091,887
HONEY (I. C (1)):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
France - - - - -	1,333	1,431	1,380	1,883	1,964	3,390	3,637	3,193	4,125	5,675
United States of America - - - - -	3,821	4,705	6,180	8,002	6,635	6,005	7,435	9,452	10,517	9,976
Chile - - - - -	3,800	660	1,943	1,860	1,831	4,317	765	2,601	2,427	2,446
Other Foreign Countries - - - - -	1,608	1,843	3,284	4,483	3,669	2,198	2,890	4,504	6,408	5,086
Total from Foreign Countries - - - - -	10,562	8,639	12,787	16,228	14,099	15,910	14,727	19,750	23,477	23,183
British West India Islands - - - - -	12,677	12,937	18,503	14,160	9,097	14,977	14,442	20,550	19,775	12,576
Other British Possessions - - - - -	644	1,780	1,327	1,644	3,531	1,042	2,567	1,973	2,592	5,572
Total from British Possessions - - - - -	13,321	14,717	19,830	15,804	12,628	16,019	17,009	22,523	22,367	19,148
TOTAL - - - - -	23,883	23,356	32,617	32,032	26,727	31,929	31,736	42,273	45,844	42,331
HOPS (I. C (1)):	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Russia - - - - -	3	13	38	314	157	10	32	210	2,170	1,500
Germany - - - - -	52,362	69,002	45,730	52,879	26,016	191,564	231,530	152,144	214,724	158,549
Netherlands - - - - -	1,821	1,213	651	599	732	6,473	4,074	1,492	3,050	4,128
Belgium - - - - -	15,065	9,989	4,355	11,658	38,394	54,254	23,014	13,095	41,490	263,638
France - - - - -	730	643	202	323	415	3,043	1,968	646	1,251	3,308
Austria-Hungary - - - - -	2,987	1,625	7,987	2,843	816	10,099	5,114	26,441	9,382	3,963
United States of America - - - - -	126,142	100,987	77,978	88,326	88,315	488,189	487,190	265,647	418,123	559,783
Mexico - - - - -	—	—	764	—	6,190	—	—	1,700	—	37,093
Other Foreign Countries - - - - -	112	—	2	2	6	262	—	2	3	17
Total from Foreign Countries - - - - -	199,222	273,472	137,707	156,944	161,041	753,894	752,922	461,377	690,193	1,031,979
Australia - - - - -	5	166	369	103	92	16	450	1,842	700	516
New Zealand - - - - -	413	263	629	1,794	455	1,418	636	3,208	10,224	4,232
Canada - - - - -	2,684	6,025	2,072	17,940	7,596	9,553	13,037	10,009	86,939	58,491
Total from British Possessions - - - - -	3,102	6,454	3,070	19,837	8,143	10,987	14,123	15,059	97,863	63,239
TOTAL - - - - -	202,324	279,926	140,777	176,781	169,184	764,881	767,045	476,436	788,056	1,095,218
HORNS, tips and pieces of Horn, and Hoofs (II. K):	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Germany - - - - -	340	323	151	292	279	17,806	15,843	10,791	15,919	15,121
Netherlands - - - - -	45	58	55	44	88	1,535	2,029	1,801	1,475	3,494
Belgium - - - - -	575	384	352	262	353	16,890	12,040	11,575	8,749	10,906
France - - - - -	174	105	264	335	330	13,141	8,689	12,401	17,269	20,146
Portugal - - - - -	44	17	26	24	16	1,969	650	980	719	616
Egypt - - - - -	57	52	66	101	79	1,438	1,132	1,755	2,981	2,241
United States of America - - - - -	120	80	204	187	131	5,483	3,049	9,065	7,094	5,919
Chile - - - - -	44	82	68	36	64	1,125	1,379	1,057	688	1,767
Brazil - - - - -	25	13	231	110	108	1,150	202	3,120	4,108	3,901
Uruguay - - - - -	265	222	351	317	125	11,166	8,479	11,953	11,457	4,583

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
HORNS, tips and pieces of Horn, and Hoofs—continued :	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Argentine Republic	225	330	520	266	395	5,554	8,573	12,558	8,064	13,301
Other Foreign Countries	248	180	135	125	159	6,029	5,102	3,370	3,608	5,329
Total from Foreign Countries	2,162	1,846	2,423	2,099	2,127	82,786	67,167	80,426	82,221	87,354
Cape of Good Hope	91	83	106	107	111	4,314	4,589	5,298	5,907	5,908
Natal	92	200	176	186	172	4,701	6,701	8,719	9,949	8,828
British India	1,579	1,147	1,256	1,336	1,583	45,350	31,459	35,177	44,096	43,679
Ceylon and Dependencies	72	76	72	82	89	8,037	6,341	5,589	6,901	5,012
Australia	341	300	407	380	382	14,384	11,297	13,602	16,635	18,386
Other British Possessions	110	78	78	94	62	3,395	2,138	2,773	2,771	1,936
Total from British Possessions	2,285	1,884	2,095	2,185	2,399	80,681	62,525	71,158	86,259	83,749
TOTAL	4,447	3,730	4,518	4,284	4,526	163,467	129,692	151,584	168,480	171,103
ICE (II. K) :	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Norway	347,072	367,010	347,829	278,037	341,808	164,570	181,030	161,722	137,909	165,772
Other Foreign Countries	214	—	—	—	433	95	—	—	—	254
TOTAL	347,286	367,010	347,829	278,037	342,241	164,665	181,030	161,722	137,909	166,026
IMPLEMENTS AND TOOLS, and parts thereof (except Machine Tools) (III. C) :						£	£	£	£	£
Sweden	—	—	—	—	—	5,504	4,785	6,012	9,115	8,385
Germany	—	—	—	—	—	91,929	86,087	94,616	108,733	123,470
Netherlands	—	—	—	—	—	2,524	3,562	1,860	1,559	1,940
Belgium	—	—	—	—	—	3,401	1,985	1,778	1,943	2,547
France	—	—	—	—	—	16,953	14,459	15,903	15,759	17,536
Switzerland	—	—	—	—	—	4,087	3,940	4,243	4,833	5,979
United States of America	—	—	—	—	—	263,884	175,087	198,968	228,876	257,429
Other Foreign Countries	—	—	—	—	—	1,534	1,260	2,133	1,452	4,272
Total from Foreign Countries	—	—	—	—	—	390,416	291,165	326,118	372,270	421,558
Canada	—	—	—	—	—	9,502	10,211	6,193	16,406	24,053
Other British Possessions	—	—	—	—	—	5	86	167	152	112
Total from British Possessions	—	—	—	—	—	9,507	10,297	6,360	16,558	24,165
TOTAL	—	—	—	—	—	399,923	301,462	332,478	388,828	445,723
INSTRUMENTS and APPARATUS, Scientific (other than Electrical)* (III. C) :						£	£	£	£	£
Germany	—	—	—	—	—	394,166	359,251	315,673	363,865	—
Netherlands	—	—	—	—	—	1,951	1,299	1,123	1,161	—
Belgium	—	—	—	—	—	75,507	32,425	27,252	51,403	—
France	—	—	—	—	—	231,867	242,908	209,364	316,241	—
Switzerland	—	—	—	—	—	29,656	26,130	27,850	33,419	—
Italy	—	—	—	—	—	2,230	1,099	4,117	5,960	—
Austria-Hungary	—	—	—	—	—	1,827	2,760	4,320	3,995	—
United States of America	—	—	—	—	—	337,452	253,303	217,089	781,732	—
Other Foreign Countries	—	—	—	—	—	11,206	5,193	7,616	1,526	—
Total from Foreign Countries	—	—	—	—	—	1,085,352	924,363	814,354	1,559,302	—
Total from British Possessions	—	—	—	—	—	1,284	1,095	409	1,418	—
TOTAL	—	—	—	—	—	1,087,136	925,458	814,763	1,560,720	—
„ Complete † (III. C) :										£
Germany	—	—	—	—	—	—	—	—	—	312,550
Belgium	—	—	—	—	—	—	—	—	—	9,684
France	—	—	—	—	—	—	—	—	—	88,163
Switzerland	—	—	—	—	—	—	—	—	—	20,101
United States of America	—	—	—	—	—	—	—	—	—	115,905
Other Foreign Countries	—	—	—	—	—	—	—	—	—	8,113
Total from Foreign Countries	—	—	—	—	—	—	—	—	—	554,516
Total from British Possessions	—	—	—	—	—	—	—	—	—	590
TOTAL	—	—	—	—	—	—	—	—	—	555,106
„ Parts thereof, including Cinematograph films, Photographic plates and films, and sensitised Photographic paper † (III. C) :										£
Germany	—	—	—	—	—	—	—	—	—	212,036
Belgium	—	—	—	—	—	—	—	—	—	65,847
France	—	—	—	—	—	—	—	—	—	307,154
Switzerland	—	—	—	—	—	—	—	—	—	14,489
Italy	—	—	—	—	—	—	—	—	—	48,218
United States of America	—	—	—	—	—	—	—	—	—	648,767
Other Foreign Countries	—	—	—	—	—	—	—	—	—	3,386
Total from Foreign Countries	—	—	—	—	—	—	—	—	—	1,299,897
Total from British Possessions	—	—	—	—	—	—	—	—	—	1,690
TOTAL	—	—	—	—	—	—	—	—	—	1,301,587

* From 1911 shown as Instruments and Apparatus, Scientific (other than Electrical) : "Complete" and "Parts thereof, &c."

† Included in "Instruments and Apparatus, Scientific (other than Electrical)" prior to 1911. Photographic Plates and Films and sensitised Photographic Paper were included in "Chemical Manufactures, &c., Unenumerated," prior to 1911.

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
OIL CLOTH:										
„ „ For Floor Coverings (III. O):	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	£	£	£	£	£
Germany - - - - -	481,742	463,827	553,902	503,566	500,162	40,194	37,836	44,512	39,336	41,386
Netherlands - - - - -	17,574	8,480	38,604	45,119	76,728	1,225	638	3,040	3,886	6,758
Belgium - - - - -	735,246	444,484	532,780	360,717	407,492	34,735	21,181	25,708	17,941	20,993
France - - - - -	6,542	10,307	9,699	4,159	14,098	815	1,273	1,051	491	1,630
United States of America - - - - -	122,227	54,519	72,551	15,986	30,002	3,694	1,671	2,804	719	2,358
Other Foreign Countries - - - - -	4,205	5,128	13,470	34,057	18,728	325	345	960	2,647	1,235
TOTAL - - - - -	1,367,536	986,745	1,221,006	963,604	1,097,210	80,988	62,444	78,075	65,020	74,360
„ „ For Furniture Coverings (III. O):	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	£	£	£	£	£
Germany - - - - -	20,544	14,888	9,159	2,477	13,024	1,559	885	547	211	574
Austria-Hungary - - - - -	15,610	25,600	27,754	5,115	28,960	1,105	1,516	1,624	418	2,515
United States of America - - - - -	105,489	39,415	25,841	82,563	182,298	12,686	4,105	2,912	5,922	12,850
Other Foreign Countries - - - - -	146,514	360	765	940	7,020	1,641	18	99	34	460
TOTAL - - - - -	288,157	80,263	63,519	91,095	231,802	16,991	6,524	5,182	6,585	16,399
„ „ For all other Purposes (III. O):	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	£	£	£	£	£
TOTAL (from Foreign Countries) - - - - -	3,689	10,106	9,836	5,480	455	145	477	264	142	76
OIL-SEED CAKE containing no dutiable ingredient:										
„ Cotton-seed Cake (III. O):	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Germany - - - - -	1,674	8,163	20,507	23,435	41,224	8,343	41,955	109,728	131,010	205,931
France - - - - -	317	1,933	1,957	1,676	4,030	1,272	9,918	9,889	9,992	17,838
Austria-Hungary - - - - -	—	980	3,195	400	—	—	5,059	13,306	1,800	—
Egypt - - - - -	60,398	65,352	69,860	61,613	75,992	292,115	320,096	357,027	328,934	379,256
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -	—	—	1,311	8,488	993	—	—	7,748	44,001	6,368
United States of America - - - - -	73,750	65,500	54,432	37,530	54,994	497,138	431,040	383,338	280,157	383,246
Mexico - - - - -	17,225	12,489	3,342	9,896	8,669	107,143	80,166	22,335	66,999	57,342
Peru - - - - -	2,958	3,506	3,775	4,929	4,937	20,620	24,855	27,898	37,780	36,970
Chile - - - - -	833	1,029	522	277	271	6,007	7,918	4,115	2,135	1,766
Brazil - - - - -	2,368	1,292	3,203	4,865	5,031	13,789	7,898	19,849	23,942	23,194
Other Foreign Countries - - - - -	778	639	233	1,220	1,526	5,349	3,402	1,438	7,791	8,631
Total from Foreign Countries - - - - -	160,301	160,883	162,337	154,329	197,667	951,776	932,307	956,671	939,541	1,120,542
British East Indies - - - - -	2,296	3,878	1,969	2,217	1,066	12,785	19,804	9,907	10,357	6,847
Other British Possessions - - - - -	92	289	336	731	294	416	1,607	1,454	2,986	1,209
Total from British Possessions - - - - -	2,388	4,167	2,305	2,948	1,360	13,201	21,411	11,361	13,343	8,056
TOTAL - - - - -	162,689	165,050	164,642	157,277	199,027	964,977	953,718	968,032	952,884	1,128,598
„ Linseed Cake (III. O):	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Russia - - - - -	43,186	37,095	34,274	33,785	8,704	319,551	284,688	271,778	233,063	72,665
Germany - - - - -	37,300	25,070	22,019	20,313	4,818	274,828	189,290	174,445	163,717	39,795
France - - - - -	50	805	206	187	53	375	5,880	1,425	1,512	288
Spain - - - - -	3,543	2,040	1,911	1,124	1,075	24,703	14,981	14,573	8,907	8,620
Roumania - - - - -	400	529	220	—	—	2,794	3,794	1,600	—	—
United States of America - - - - -	22,713	22,794	23,428	22,030	17,550	161,463	163,499	184,799	181,063	139,017
Mexico - - - - -	847	935	299	—	40	6,522	6,178	2,042	—	310
Uruguay - - - - -	218	412	546	243	601	1,587	3,107	4,387	2,126	5,337
Argentine Republic - - - - -	2,622	2,887	2,999	1,905	1,978	18,373	21,310	23,650	15,677	15,591
Other Foreign Countries - - - - -	856	1,063	849	376	566	5,115	6,346	6,417	2,841	4,845
Total from Foreign Countries - - - - -	111,735	93,630	86,751	79,963	35,385	815,301	699,573	685,116	603,911	286,468
British India - - - - -	16,090	17,951	15,299	14,158	9,999	114,743	132,293	119,653	115,496	82,848
Canada - - - - -	13,183	11,237	10,894	10,000	7,419	94,721	80,442	83,114	79,923	58,601
Other British Possessions - - - - -	3	350	243	89	16	17	2,300	1,880	685	125
Total from British Possessions - - - - -	29,276	29,538	26,436	24,247	17,434	209,481	215,535	204,647	196,104	141,574
TOTAL - - - - -	141,011	123,168	113,187	104,210	52,819	1,024,782	915,108	889,763	860,015	428,042
„ Rape-Seed Cake (III. O):	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Russia - - - - -	4,339	9,474	15,278	20,022	43,481	23,021	49,144	76,428	94,563	183,043
Other Foreign Countries - - - - -	577	2,184	936	2,927	7,366	2,600	12,624	4,891	15,504	28,542
Total from Foreign Countries - - - - -	4,916	11,658	16,214	22,949	50,847	25,621	61,768	81,319	110,067	211,585
Total from British Possessions - - - - -	226	41	8	220	244	1,329	203	32	967	1,119
TOTAL - - - - -	5,142	11,699	16,222	23,169	51,091	26,950	61,971	81,351	111,034	212,704

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
OIL-SEED CAKE containing no dutiable ingredient—continued :										
„ Unenumerated (III. O) :	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Russia - - - - -	1,237	2,858	2,919	1,898	1,497	6,469	15,357	14,652	9,837	7,816
France - - - - -	4,127	4,683	4,370	5,697	7,747	23,905	26,654	26,992	34,297	44,427
Spain - - - - -	1,468	883	1,701	2,750	4,046	10,080	6,313	12,297	19,557	26,873
United States of America - - - - -	365	271	1,103	1,432	13	1,891	1,401	6,145	7,956	153
Other Foreign Countries - - - - -	880	2,420	1,379	1,410	1,473	5,652	12,905	7,977	6,832	7,677
Total from Foreign Countries - - -	8,077	11,115	11,472	13,187	14,776	47,997	62,890	68,063	78,479	86,446
British India - - - - -	12,568	21,342	22,615	19,039	20,221	68,169	124,529	119,654	106,035	106,015
Other British Possessions - - - - -	247	111	625	184	292	1,349	526	3,531	1,107	1,839
Total from British Possessions - - -	12,815	21,453	23,240	19,223	20,513	70,018	125,055	123,185	107,192	107,854
TOTAL - - - - -	20,892	32,568	34,712	32,410	35,289	118,015	187,745	191,248	185,671	194,300
OIL-SEED CAKE containing no dutiable ingredient—Total Value of:—						£	£	£	£	£
From Foreign Countries - - - - -	—	—	—	—	—	1,840,695	1,756,338	1,791,169	1,791,998	1,705,041
„ British Possessions - - - - -	—	—	—	—	—	294,029	362,204	339,225	317,606	258,603
TOTAL VALUE - - - - -	—	—	—	—	—	2,134,724	2,118,542	2,130,394	2,109,604	1,963,644
OLEO-MARGARINE or OLEO-OIL, and REFINED TALLOW (I. C (1)) :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Germany - - - - -	4,726	6,082	3,806	3,495	234	11,179	15,105	9,791	9,332	431
Netherlands - - - - -	32,897	55,786	15,354	8,217	3,031	78,144	140,329	41,535	20,606	7,200
France - - - - -	19,125	27,815	37,722	39,699	13,652	42,267	64,464	94,635	100,221	28,550
United States of America - - - - -	237,692	295,102	285,520	156,321	123,380	517,313	700,465	791,876	425,343	274,360
Argentine Republic - - - - -	69,412	103,367	138,256	185,144	169,699	144,413	220,612	304,161	437,771	326,688
Other Foreign Countries - - - - -	631	673	1,942	1,792	1,034	1,348	1,355	4,265	4,719	2,592
Total from Foreign Countries - - -	364,433	488,825	482,600	395,168	311,030	794,664	1,202,330	1,246,263	997,992	639,801
Australia - - - - -	—	—	8,136	21,972	44,352	—	—	16,677	49,759	82,948
New Zealand - - - - -	1,025	7,168	10,615	30,547	7,530	1,745	14,255	21,340	67,192	14,930
Canada - - - - -	7,092	3,701	103	523	836	16,742	10,137	274	1,440	1,865
Other British Possessions - - - - -	—	—	—	—	200	—	—	—	—	430
Total from British Possessions - - -	8,117	10,869	18,859	53,047	52,968	18,487	24,392	33,291	118,391	100,173
TOTAL - - - - -	372,600	499,694	501,459	448,215	363,998	813,151	1,226,722	1,284,554	1,116,383	739,974
PAINTERS' COLOURS AND PIGMENTS:										
„ Barytes* (III. J) :		Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Germany - - - - -	—	379,727	447,634	556,329	631,313	—	66,622	77,601	90,084	92,685
Netherlands - - - - -	—	49,137	69,642	60,873	63,242	—	6,876	9,176	7,887	9,298
Belgium - - - - -	—	323,010	298,361	279,850	266,581	—	34,066	33,409	34,391	31,171
Other Foreign Countries - - - - -	—	3,912	4,066	11,253	3,948	—	796	1,211	2,242	1,331
Total from Foreign Countries - - -	—	755,786	819,703	908,305	965,184	—	108,360	121,397	134,604	134,485
Total from British Possessions - - -	—	430	—	200	30	—	54	—	35	20
TOTAL - - - - -	—	756,266	819,703	908,505	965,244	—	108,414	121,397	134,639	134,505
„ Nickel Oxide (III. J) :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
United States of America - - - - -	24,004	11,553	19,455	17,294	15,117	123,771	58,753	96,325	86,136	74,312
Other Foreign Countries - - - - -	278	95	5	3	—	1,017	399	23	14	—
TOTAL - - - - -	24,282	11,648	19,460	17,297	15,117	124,788	59,152	96,348	86,150	74,312
„ Red Lead† (III. J) :					Cwts.					£
Germany - - - - -	—	—	—	—	63,740	—	—	—	—	51,340
Netherlands - - - - -	—	—	—	—	8,408	—	—	—	—	7,012
Other Foreign Countries - - - - -	—	—	—	—	461	—	—	—	—	446
TOTAL - - - - -	—	—	—	—	72,618	—	—	—	—	58,798
„ White Lead (III. J) :	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	£	£	£	£	£
Germany - - - - -	164,939	153,186	123,409	124,807	160,067	168,108	143,096	103,518	104,884	134,289
Netherlands - - - - -	16,884	9,679	4,650	11,325	15,860	18,380	8,796	3,883	9,091	13,239
Belgium - - - - -	81,933	51,732	60,600	55,403	65,221	83,920	57,903	56,211	46,430	56,356
France - - - - -	2,092	484	71	116	163	2,417	551	67	141	159
United States of America - - - - -	31,725	96,624	127,506	96,009	92,768	33,818	83,093	103,239	77,908	77,113
Other Foreign Countries - - - - -	1,070	1,259	1,143	1,066	1,432	1,553	1,879	1,789	1,918	2,591
Total from Foreign Countries - - -	298,643	317,964	317,379	283,731	335,511	308,196	295,318	268,707	240,372	283,747
Total from British Possessions - - -	—	18	—	—	—	—	35	—	—	—
TOTAL - - - - -	298,643	317,982	317,379	283,731	335,511	308,196	295,353	268,707	240,372	283,747

* Included in "Painters' Colours and Pigments, Unenumerated," prior to 1908.

† Included in "Painters' Colours and Pigments, Unenumerated" prior to 1911.

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—continued.

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
PLATED AND GILT WARES* (III. B):								£	£	£
Germany - - - - -	—	—	—	—	—	—	—	14,932	19,182	24,112
Other Foreign Countries - - - - -	—	—	—	—	—	—	—	8,052	8,497	16,306
Total from Foreign Countries - - -	<i>Plated and Gilt Wares are entered by value only.</i>					—	—	22,984	27,679	40,418
Total from British Possessions - - -						—	—	63	126	88
TOTAL - - - - -	—	—	—	—	—	—	—	23,047	27,805	40,506
PLUMBAGO (II. K):	Tons.	Tons.	Tons.	Tons.	Tons.	£	£	£	£	£
Germany - - - - -	2,026	1,536	1,939	2,669	2,696	23,820	18,464	18,719	22,528	24,514
France - - - - -	37	258	287	412	1,079	668	1,086	4,245	9,583	23,999
Italy - - - - -	1,152	883	1,087	941	880	5,472	4,156	5,378	4,177	3,806
Austria-Hungary - - - - -	645	372	369	340	202	7,919	4,179	3,756	3,504	1,889
Japan - - - - -	337	419	3,618	3,228	2,583	2,949	3,611	21,811	19,085	16,236
United States of America - - - - -	441	252	291	425	254	9,445	5,646	6,584	10,971	6,098
Other Foreign Countries - - - - -	768	1,357	629	303	735	2,798	4,477	6,136	2,459	6,745
Total from Foreign Countries - - -	5,406	5,077	8,220	8,318	8,429	53,071	41,619	66,628	72,857	83,287
British India - - - - -	943	1,586	1,825	1,817	1,631	17,500	23,417	29,140	26,155	21,439
Ceylon and Dependencies - - - - -	9,161	7,930	6,462	6,105	5,738	217,735	179,601	141,870	118,648	123,030
Australia - - - - -	18	—	63	16	14	545	—	3,450	700	148
Canada - - - - -	—	13	63	123	68	—	80	1,635	3,826	1,518
Other British Possessions - - - - -	—	1	12	7	10	—	15	195	63	92
Total from British Possessions - - -	10,122	9,580	8,425	8,068	7,461	235,780	203,113	176,290	149,392	146,227
TOTAL - - - - -	15,528	14,607	16,645	16,386	15,890	288,851	244,732	242,918	222,249	229,514
POULTRY AND GAME (alive or dead):										
„ Poultry (I. B):						£	£	£	£	£
Russia - - - - -	—	—	—	—	—	277,799	360,362	351,918	303,260	404,994
Germany - - - - -	—	—	—	—	—	9,381	10,610	8,618	12,493	6,791
Netherlands - - - - -	—	—	—	—	—	5,109	7,998	4,892	7,586	5,159
Belgium - - - - -	—	—	—	—	—	10,155	8,510	11,321	12,997	9,953
France - - - - -	—	—	—	—	—	181,942	170,387	156,085	163,527	116,267
Italy - - - - -	—	—	—	—	—	105,551	97,537	114,795	99,866	81,908
Austria-Hungary - - - - -	—	—	—	—	—	87,335	114,037	108,542	79,607	92,597
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -	<i>Poultry and Game: Poultry (alive or dead) is entered by value only - - - - -</i>					—	—	9,312	44,895	48,659
United States of America - - - - -						203,588	153,135	149,552	88,144	137,469
Other Foreign Countries - - - - -	—	—	—	—	—	561	1,674	2,676	3,256	2,720
Total from Foreign Countries - - -	—	—	—	—	—	881,421	924,245	917,711	815,581	906,512
Canada - - - - -	—	—	—	—	—	20,173	9,161	2,803	5,362	10,971
Other British Possessions - - - - -	—	—	—	—	—	2,253	1,273	183	349	714
Total from British Possessions - - -	—	—	—	—	—	22,426	10,434	2,986	5,711	11,685
TOTAL - - - - -	—	—	—	—	—	903,847	934,679	920,697	821,292	918,197
„ Game (I. B):						£	£	£	£	£
Russia - - - - -	—	—	—	—	—	43,010	22,523	32,573	49,261	26,894
Norway - - - - -	—	—	—	—	—	4,096	6,970	6,375	8,819	4,521
Germany - - - - -	—	—	—	—	—	13,341	10,205	3,379	3,994	2,805
Netherlands - - - - -	—	—	—	—	—	20,806	17,268	14,583	14,562	12,149
Belgium - - - - -	—	—	—	—	—	2,809	3,742	1,165	4,056	1,348
Austria-Hungary - - - - -	—	—	—	—	—	9,456	9,510	4,713	5,622	3,259
Egypt - - - - -	—	—	—	—	—	29,735	34,810	32,680	26,743	15,557
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -	<i>Poultry and Game: Game (alive or dead) is entered by value only.</i>					—	—	4,255	11	520
Other Foreign Countries - - - - -						1,965	4,463	2,708	2,518	6,532
Total from Foreign Countries - - -	—	—	—	—	—	125,218	109,491	102,431	115,586	73,585
Australia - - - - -	—	—	—	—	—	24,066	7,998	4,753	6,570	4,376
New Zealand - - - - -	—	—	—	—	—	703	696	694	1,439	1,081
Other British Possessions - - - - -	—	—	—	—	—	96	21	220	20	85
Total from British Possessions - - -	—	—	—	—	—	24,868	8,715	5,667	8,029	5,542
TOTAL - - - - -	—	—	—	—	—	150,086	118,206	108,098	123,615	79,127

* Included in "Metals and Ores: Metal, Unenumerated, Wrought or Manufactured," prior to 1909.

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
SILK—continued :										
„ Manufactures of Silk mixed with other Materials, if known as “Silks” :										
„ „ Lace and Articles thereof (III. H (3)) :						£	£	£	£	£
Germany - - - - -	<i>Silk Manufactures, of Silk mixed with other Materials, if known as “Silks,” Lace, &c., are entered by value only.</i>					31,601	25,576	18,759	6,486	5,171
France - - - - -						247	30	6,350	104,881	140,629
Other Foreign Countries - - - - -						522	440	181	698	238
TOTAL - - - - -	—	—	—	—	—	32,370	26,046	25,290	112,065	146,038
„ „ Ribbons (III. H (3)) :						£	£	£	£	£
Germany - - - - -	<i>Silk Manufactures, of Silk mixed with other Materials, if known as “Silks,” Ribbons, are entered by value only.</i>					702,868	506,600	585,065	587,096	500,448
Belgium - - - - -						8,568	26,770	25,309	28,345	29,768
France - - - - -						23,475	36,462	14,882	18,064	18,484
Switzerland - - - - -						524,995	368,384	416,084	510,941	488,654
Italy - - - - -						5,293	6,867	6,573	10,164	8,883
Other Foreign Countries - - - - -						2,631	2,598	787	2,691	453
Total from Foreign Countries - - - - -	—	—	—	—	—	1,267,830	947,681	1,048,790	1,157,301	1,046,680
Total from British Possessions - - - - -	—	—	—	—	—	—	74	—	20	—
TOTAL - - - - -	—	—	—	—	—	1,267,830	947,755	1,048,790	1,157,321	1,046,680
„ „ Other Manufactures of Silk, or of Silk mixed with other Materials, if known as “Silks.” (III. H. (3)) :						£	£	£	£	£
Germany - - - - -	<i>Other Manufactures of Silk or of Silk mixed with other Materials, if known as “Silks,” are entered by value only.</i>					220,418	211,841	195,127	192,801	243,447
Belgium - - - - -						13,526	15,793	23,735	28,851	32,088
France - - - - -						767,529	606,566	292,974	335,693	269,070
Switzerland - - - - -						28,073	15,480	22,715	32,082	29,808
Italy - - - - -						6,004	5,221	10,191	5,296	9,191
Austria-Hungary - - - - -						21,053	35,045	32,961	19,920	14,812
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -						4,363	5,110	3,330	3,094	4,823
Japan (including Formosa) - - - - -						183,669	148,725	104,882	116,047	109,925
United States of America - - - - -						832	368	1,261	6,839	29,582
Other Foreign Countries - - - - -						539	927	2,226	998	1,580
Total from Foreign Countries - - - - -	—	—	—	—	—	1,201,006	1,045,076	689,402	741,621	744,326
British India - - - - -	—	—	—	—	—	1,572	1,130	554	301	1,611
Hong Kong - - - - -	—	—	—	—	—	3,306	913	3,488	4,063	5,680
Other British Possessions - - - - -	—	—	—	—	—	3,072	231	40	57	234
Total from British Possessions - - - - -	—	—	—	—	—	7,950	2,274	4,082	4,421	7,525
TOTAL - - - - -	—	—	—	—	—	1,208,956	1,047,350	693,484	746,042	751,851
SKINS AND FURS:										
„ Skins, undressed: Goat, (II. I) :	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Russia - - - - -	1,140,948	1,397,371	356,522	445,262	207,022	113,902	144,424	38,797	51,767	23,635
Norway - - - - -	7,292	5,420	5,799	21,620	12,692	1,813	1,187	1,214	3,896	2,783
Germany - - - - -	226,566	199,746	178,811	248,171	278,304	54,929	49,923	43,181	56,542	58,960
Netherlands - - - - -	32,930	21,221	46,800	8,739	26,169	4,308	2,242	4,983	2,160	4,940
Belgium - - - - -	21,587	20,265	3,370	16,869	2,720	7,269	1,717	535	3,694	535
France - - - - -	1,985,181	566,873	470,600	145,761	460,126	264,204	62,530	49,841	15,815	50,395
Algeria - - - - -	65,050	63,213	53,330	35,830	9,360	5,365	5,715	4,202	4,607	993
Spain - - - - -	2,638	6,000	17,980	3,600	9,044	595	1,916	3,449	719	1,722
Italy - - - - -	14,160	9,080	81,800	5,035	39,425	1,468	926	9,141	671	5,433
Austria-Hungary - - - - -	45,119	8,984	23,710	—	28,350	7,153	1,795	2,967	—	3,848
Turkey, European - - - - -	111,114	27,220	2,180	18,090	36,060	10,062	1,917	909	6,040	7,280
„ Asiatic - - - - -	122,220	150	68,060	101,205	97,063	14,797	45	5,576	8,259	8,410
Egypt - - - - -	341,773	456,298	422,677	712,748	417,044	32,706	39,203	39,390	68,232	39,936
Morocco - - - - -	878,996	796,331	1,567,541	1,602,613	702,743	97,463	62,907	137,997	134,352	62,303

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—continued.

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
SKINS AND FURS—continued :										
„ Skins, undressed—continued :										
„ Goat—continued :										
	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -	277,147	216,605	273,796	377,098	486,856	27,970	16,681	24,940	32,684	46,159
United States of America - - - - -	32,929	97,960	32,425	78,629	500,868	6,095	9,570	3,201	6,772	64,874
Brazil - - - - -	747,034	1,289,563	1,127,368	160,876	89,998	94,328	160,577	141,879	27,341	14,361
Other Foreign Countries - - - - -	68,558	84,654	80,222	197,851	118,322	7,098	7,282	8,344	17,286	13,012
Total from Foreign Countries - - - - -	6,121,242	5,266,954	4,813,001	4,179,997	3,522,666	751,525	570,557	520,546	440,837	409,679
Cape of Good Hope - - - - -	2,170,955	2,068,004	2,355,886	2,169,969	2,307,726	320,240	298,723	354,363	326,101	343,536
Natal - - - - -	64,621	118,640	131,240	81,916	146,344	5,875	14,797	18,131	7,045	11,801
Aden and Dependencies - - - - -	559,278	265,850	409,322	888,396	706,354	48,080	22,919	34,812	82,989	68,823
British India - - - - -	4,675,444	3,537,774	8,563,767	5,082,869	4,530,634	479,531	326,530	856,700	522,612	475,515
Other British Possessions - - - - -	106,092	59,744	61,314	151,751	546,946	9,584	4,202	3,962	13,560	47,513
Total from British Possessions - - - - -	7,576,390	6,050,012	11,521,529	8,374,901	8,238,004	863,310	667,171	1,267,968	952,307	947,188
TOTAL - - - - -	13,697,632	11,316,966	16,334,530	12,554,898	11,760,670	1,614,835	1,237,728	1,788,514	1,393,144	1,356,867
„ Sheep : Woolled (that is, with Wool left on) (II. I) :										
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	£	£	£	£	£
Russia - - - - -	4,267,521	460,497	628,940	927,188	1,046,584	155,622	14,849	17,844	36,738	33,449
Denmark (including Faroe Islands) - - - - -	653,962	131,262	242,798	71,859	70,496	20,131	3,755	7,912	1,640	2,301
Germany - - - - -	144,489	197,512	288,922	226,558	173,883	7,711	6,333	8,692	9,140	6,250
Netherlands - - - - -	51,952	355,645	644,048	173,700	191,311	1,356	8,311	15,878	3,997	4,124
France - - - - -	2,918,491	92,106	1,478,304	69,375	85,439	114,482	3,148	50,568	2,486	4,089
Spain - - - - -	635,256	905,034	1,255,645	334,720	812,568	33,875	37,490	44,701	15,813	24,132
Turkey - - - - -	541,062	456,850	284,356	1,023,894	398,830	19,823	13,707	8,464	32,573	14,683
Egypt - - - - -	867,948	412,038	718,504	622,589	1,140,837	25,120	11,222	18,058	20,099	34,909
Morocco - - - - -	284,450	13,784	25,350	61,610	172,221	7,254	324	651	1,221	2,987
United States of America - - - - -	171,607	204,290	105,890	28,893	26,913	7,107	7,512	5,243	997	1,267
Chile - - - - -	2,293,481	4,540,595	3,894,385	4,441,509	3,248,732	79,020	119,228	100,294	115,498	81,624
Brazil - - - - -	115,924	288,787	320,958	32,100	69,218	9,249	16,750	20,152	1,979	2,272
Argentine Republic - - - - -	2,924,644	3,228,699	5,300,391	3,601,948	2,802,952	123,310	88,805	148,262	137,154	76,462
Other Foreign Countries - - - - -	860,762	1,057,426	1,044,627	1,908,639	715,355	30,543	29,271	29,346	61,346	23,720
Total from Foreign Countries - - - - -	16,731,549	12,344,525	16,233,118	13,524,582	10,955,329	634,603	360,705	476,065	411,681	322,269
Cape of Good Hope - - - - -	14,159,391	16,604,124	20,528,175	21,800,005	20,297,729	472,994	499,429	543,344	565,279	520,082
Natal - - - - -	2,242,917	1,708,055	2,449,359	2,998,010	3,371,069	70,473	49,117	63,368	76,094	84,853
Aden and Dependencies - - - - -	619,100	428,974	861,695	1,129,111	1,358,821	35,512	17,589	35,215	73,895	83,029
British India - - - - -	639,014	50,074	190,909	164,736	67,884	26,278	1,830	6,091	5,678	2,130
Australia - - - - -	17,560,189	26,240,543	27,213,095	28,887,292	27,278,440	602,045	694,039	738,683	784,070	715,819
New Zealand - - - - -	6,528,345	6,222,876	6,657,674	7,202,481	7,096,830	233,038	182,811	175,909	186,716	184,578
Falkland Islands - - - - -	537,737	244,225	491,527	602,992	526,868	20,689	6,310	12,579	17,105	17,891
Other British Possessions - - - - -	32,427	45,679	29,204	135,573	333,582	1,093	1,183	894	3,414	8,789
Total from British Possessions - - - - -	42,319,120	51,544,550	58,421,638	63,019,200	60,331,223	1,462,122	1,451,808	1,576,083	1,715,251	1,617,171
TOTAL - - - - -	59,050,669	63,889,075	74,654,756	76,543,782	71,286,552	2,096,725	1,812,513	2,062,148	2,126,932	1,939,440
„ Pickled (II. I) :										
	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Russia - - - - -	459,988	28,760	155,100	87,117	20,140	45,937	3,413	13,236	7,722	3,107
Netherlands - - - - -	98,494	175,925	79,746	113,384	99,374	16,732	18,176	9,773	14,398	11,512
France - - - - -	2,034,439	628,697	1,682,173	834,470	566,569	189,443	48,611	108,017	52,335	47,030
Turkey - - - - -	72,513	65,917	12,835	19,000	2,950	5,577	3,826	706	888	276
Morocco - - - - -	70,524	4,291	4,270	—	1,300	9,246	490	406	—	130
United States of America - - - - -	59,575	87,391	35,098	94,195	41,534	6,398	7,985	2,786	5,754	2,019
Argentine Republic - - - - -	568,552	35,967	711,763	1,196,772	607,104	58,532	3,390	67,084	114,016	48,507
Other Foreign Countries - - - - -	238,469	225,170	299,715	479,117	432,834	24,415	18,777	30,030	49,110	42,658
Total from Foreign Countries - - - - -	3,602,554	1,252,118	2,980,700	2,824,055	1,771,805	356,280	99,668	232,038	244,223	155,239
Aden and Dependencies - - - - -	441,404	287,389	422,987	69,525	30,700	43,063	18,277	33,117	6,786	3,114
British India - - - - -	115,725	2,970	117,852	46,247	39,130	11,091	196	7,779	3,816	2,475
Australia - - - - -	2,141,461	1,042,553	2,163,028	1,691,325	1,242,811	191,843	83,472	152,285	138,809	94,522
New Zealand - - - - -	4,708,939	4,192,968	4,953,884	4,353,888	4,616,392	468,562	361,161	434,762	436,223	414,669
Other British Possessions - - - - -	2,950	23,697	3,040	3,500	10,720	288	1,659	458	312	1,200
Total from British Possessions - - - - -	7,410,479	5,549,577	7,660,741	6,664,485	5,939,753	714,847	464,765	628,401	580,946	515,980
TOTAL - - - - -	11,013,033	6,801,695	10,641,441	9,488,540	7,711,558	1,071,127	564,433	860,439	825,169	671,219

TABLE 14.—IMPORTS OF FOREIGN AND COLONIAL MERCHANDISE—FREE OF DUTY—*continued.*

ARTICLES AND COUNTRIES WHENCE CONSIGNED.	QUANTITIES.					VALUE.				
	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
SKINS AND FURS—continued:										
„ Skins, undressed—continued:										
Unenumerated (II. I):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Germany - - - - -	2,642	11,561	4,301	23,265	18,850	198	142	713	546	2,155
Netherlands - - - - -	1,300	3,298	2,447	2,885	1,310	170	347	674	353	173
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -	14,900	—	13,854	120,124	23,901	750	—	1,075	8,710	1,558
United States of America - - - - -	33,371	18,915	21,158	12,713	3,980	5,971	3,200	4,104	1,251	554
Other Foreign Countries - - - - -	42,273	50,574	24,928	63,146	43,412	2,880	4,697	3,466	7,689	6,719
Total from Foreign Countries - - -	93,586	84,348	66,688	222,133	96,453	9,978	8,386	10,032	18,549	11,159
Aden and Dependencies - - - - -	313,640	87,110	141,490	632,270	770,666	5,261	802	2,182	12,541	14,534
British India - - - - -	6,985	4,465	6,780	4,310	2,760	979	478	642	443	327
Australia - - - - -	16,800	12,700	—	50,927	547,685	1,302	1,121	—	6,332	32,318
Other British Possessions - - - - -	1,654	10,605	824	8,081	2,147	333	1,329	158	1,604	359
Total from British Possessions - - -	339,079	114,880	149,094	695,588	1,323,258	7,875	3,730	2,982	20,920	47,548
TOTAL - - - - -	432,665	199,228	215,782	917,721	1,419,711	17,853	12,116	13,014	39,469	58,707
„ Skins, Dressed (not Leather) (III. O):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Russia - - - - -	—	356	870	17,050	22,200	—	265	507	1,833	3,395
Germany - - - - -	35,831	1,206	36,935	30,478	20,131	7,118	221	6,266	4,430	3,539
France - - - - -	43,852	8,391	4,926	10,013	25,767	3,640	1,541	556	1,409	4,260
Spain - - - - -	—	—	2,400	5,730	4,320	—	—	263	1,448	460
Turkey - - - - -	12,000	—	—	2,140	300	800	—	—	235	40
China (exclusive of Hong Kong, Macão and Wei-hai-Wei) - - - - -	170,550	93,662	345,446	402,384	185,576	25,609	11,023	36,187	40,576	22,942
Other Foreign Countries - - - - -	25,836	9,994	16,338	3,182	7,047	2,489	2,071	3,105	910	1,191
Total from Foreign Countries - - -	288,119	113,669	406,915	470,977	265,341	39,656	15,121	46,884	50,841	35,727
Total from British Possessions - - -	369	1,002	52	20	22,621	28	230	15	20	2,095
TOTAL - - - - -	288,488	114,671	406,967	470,997	287,962	39,684	15,351	46,899	50,861	37,822
„ Furs: Rabbit Skins, Undressed (H. I):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Germany - - - - -	17,050	47,528	39,462	243,726	361,469	182	546	529	2,689	5,473
Belgium - - - - -	13,072,242	13,126,655	11,255,772	13,698,675	12,995,541	126,828	115,070	107,714	145,258	139,336
France - - - - -	3,154,000	3,058,343	3,845,158	1,999,599	180,798	26,380	25,733	31,546	23,720	2,692
Other Foreign Countries - - - - -	66,590	37,712	169,600	820,275	353,900	505	344	1,406	7,067	5,241
Total from Foreign Countries - - -	16,909,882	16,270,238	15,309,992	16,762,275	13,891,708	153,895	141,693	141,195	178,743	152,742
Australia - - - - -	60,174,891	45,246,529	43,442,559	56,336,262	55,217,935	369,036	275,811	315,481	474,839	401,784
New Zealand - - - - -	5,367,220	7,016,510	7,379,960	9,284,513	8,191,144	40,834	52,217	66,977	102,129	76,547
Other British Possessions - - - - -	11,088	15,284	2,863	6,801	8,300	60	126	37	91	197
Total from British Possessions - - -	65,553,199	52,278,323	50,825,382	65,627,576	63,417,379	409,930	328,154	382,495	577,059	478,528
TOTAL - - - - -	82,463,081	68,548,561	66,135,374	82,389,851	77,309,087	563,825	469,847	523,690	755,802	631,270
„ „ Rabbit Skins, Dressed (III. O):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Germany - - - - -	80,158	44,287	184,170	300,699	264,578	1,632	736	4,011	11,235	8,752
Belgium - - - - -	126,402	43,045	292,697	749,130	246,832	3,181	1,567	8,590	25,869	11,756
France - - - - -	59,690	11,436	43,284	637,446	617,985	1,970	476	3,092	56,313	46,695
Other Foreign Countries - - - - -	16,940	—	9,700	21,668	38,783	516	—	166	696	1,515
Total from Foreign Countries - - -	283,190	103,768	529,851	1,708,943	1,168,178	7,299	2,779	15,859	94,113	68,718
Total from British Possessions - - -	1,200	2,800	7,200	102	—	40	90	600	7	—
TOTAL - - - - -	284,390	106,568	537,051	1,709,045	1,168,178	7,339	2,869	16,459	94,120	68,718
„ „ Seal Skins, Undressed (II. I):	Number.	Number.	Number.	Number.	Number.	£	£	£	£	£
Russia - - - - -	20,482	26,126	27,980	45,679	52,595	42,273	43,642	15,103	29,765	37,300
Norway - - - - -	46,596	61,243	60,694	65,798	49,275	14,817	16,646	16,136	22,011	16,186
Japan (including Formosa) - - - - -	12,212	13,410	11,398	8,640	11,483	51,975	52,357	47,681	48,947	65,809
United States of America - - - - -	29,396	23,510	24,556	15,152	18,045	102,881	108,685	100,834	101,306	102,367
Chile - - - - -	4,459	2,790	2,545	1,313	2,881	6,319	3,996	3,918	2,217	3,965
Uruguay - - - - -	11,957	7,246	4,220	150	4,295	23,280	14,492	8,440	75	9,769
Other Foreign Countries - - - - -	14,166	10,162	6,160	6,307	13,999	8,319	4,363	3,651	2,081	11,971
Total from Foreign Countries - - -	139,268	144,487	137,553	143,089	152,673	249,864	244,181	195,763	206,402	247,364
Cape of Good Hope - - - - -	13,086	12,003	15,061	11,434	10,742	10,381	9,340	17,006	18,776	10,723
Natal - - - - -	—	—	1,502	171	—	—	—	5,117	684	—
Canada - - - - -	22,998	15,474	6,682	10,280	6,367	21,675	27,609	16,716	24,271	11,827
Newfoundland and Coast of Labrador - - - - -	9,551	205,615	126,796	167,649	198,906	3,577	60,960	37,736	55,456	62,789
Other British Possessions - - - - -	1,916	1,979	461	460	2,236	2,601	2,628	593	909	3,187
Total from British Possessions - - -	47,551	235,071	160,502	189,994	218,251	38,234	100,537	77,168	100,096	88,532
TOTAL - - - - -	186,819	379,558	298,055	333,083	370,924	288,098	344,718	272,931	306,498	335,896

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- Danger attaching to, *A. W. Anstruther*, 40, 47, 85-6, 356-8; *S. Stockman*, 420, 600, 770-1, 930-2; *Sir E. H. St. L. Clarke*, 1461; *Sir J. McFadyean*, 2543; *A. Mansell*, 3343, 3359; *Prof. J. Penberthy*, 3762; *J. Crowhurst*, 5725; *C. Douglas*, 5863, 5867-8; *F. P. Matthews*, 6476; *Dr. J. G. Parker*, 6497-8

as Deck cargo only:

- Advocated, *J. McPhail* - - - 5489-90, 5564-6
- Shippers would not make any objection, *J. McPhail* - - - - 5523-6
- Depôt for, on landing advocated, unless disinfected at port of embarkation, *J. McPhail* 5495-6

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- Advocated, *Col. B. B. Sapwell* - - - 6054
- Cost, question of, *A. Mansell* - - - 3440-3
- of Dried hides as much as raw advocated, without further experimentation, *Prof. J. Penberthy* - - - - 3111-6
- before Drying preferable, but not always practicable, *Prof. H. R. Procter* - - - 6076
- Experiment advocated, *J. McPhail* - - 5673-8
- Outside of bales more dangerous than inside, and question of need for opening of bales, *Prof. J. Penberthy* - - - - 3105-10
- at Port of embarkation:
- in Addition to disinfection of railway trucks desirable, *Col. B. B. Sapwell* 5986-91
- would be Advantageous *Dr. B. Bang*- 6817-21
- Advocated, *S. Stockman*, 525-6 531, 598, 901-4, 933-7, 980; *Prof. J. Penberthy*, 2793, 3038, 3164; *M. C. Barling*, 5190-2; *J. McPhail*, 5482, 5484, 5489; *Prof. H. R. Procter*, 6060, 6102

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- at Port of embarkation—continued.
- Advocated, but question of interference with trade, *Sir J. McFadyean*, 2613; *Prof. J. Penberthy*, 2789 93, 3035-9
- Carriage in holds or on decks would be immaterial, *J. McPhail* - - - - 5552
- Disinfection of holds and decks, etc., would be unnecessary, *J. McPhail*, 5485-7, 5494; *Dr. B. Bang*, 6912-3
- would be Easy, *Sir E. H. St. L. Clarke* - 1462
- Preferable to disinfection of trucks and wagons, *A. Mansell* - - - - 3384-5
- Possible, *A. Mansell*, 3347; *C. E. Tankard*, 2496-7
- would be Profitable to leather trade, *Prof. H. R. Procter* - - - - 6182-3
- Question of, *Col. B. B. Sapwell* - - - 5986
- at Port of importation, preferable to that of embarkation, *Prof. H. R. Procter* - 6135
- Process would be the same for all, thick, thin or split, *Prof. H. R. Procter* - - - 6139-41
- only Safeguard against anthrax, *Sir W. H. Davies* - - - - 6959-60
- Suggestion approved, *J. Crowhurst* - - 5784
- must be Thorough or not done at all, *J. McPhail* - - - - 5475-6, 5481
- Diversion to certain continental ports owing to lower shipping charges, *Dr. J. G. Parker* - 6568
- DRY:
- Anthrax brought into country by, *A. Seymour-Jones* - - - - 8706-8, 4732
- Consignment from Paris to Shrewsbury, case of, *A. Mansell* - - - - 3343-7, 3351
- Countries from which imported, *A. Seymour-Jones* - - - - 4531-2
- Danger attaching to, and extent of, *C. E. Tankard*, 2311-6, *Prof. H. R. Procter*, 6072-3; *Dr. J. G. Parker*, 6580; *Dr. B. Bang*, 6681-4, 6687, 6690, 6814, 6898-903
- little Danger of contact with disease during transshipment of, in Belgium, *C. E. Tankard* - - - - 2458-61
- more Dangerous than wet, *Prof. H. R. Procter* - - - 6072-3, 6108, 6142-3
- Disinfected against foot-and-mouth disease, but conveyers of anthrax, *A. Seymour-Jones* - - - - 4615-20
- Home Office regulations re handling, impossibility of carrying out, *Sir W. H. Davies* 6925
- Imported, returns for 12 months to 31st December, 1911, *A. Mansell* - - - 3354-5
- Mixing of, with oranges in railway delivery van, case of, *Dr. J. G. Parker* - - - 6580
- Prohibition of export of, question of interference with trade, *J. McPhail* - - 5548-51
- Restoration to wet-salted condition, methods, *A. Seymour-Jones* - - - - 4709-10
- Small importation of, mostly from South America, *C. E. Tankard* - - - - 2298
- from South America, frequently brought *via* Antwerp, possible contagion with animals or skins affected with foot-and-mouth disease, *C. E. Tankard* - - - 2391-4
- Dry and dry-salted, difference between, *Sir W. H. Davies* - - - - 6925
- Drying unsatisfactory and leads to waste, *Dr. J. G. Parker*, 6496, 6566, 6585-90, 6606-7; *Sir W. H. Davies*, 6925
- Export to U.S.A., see under U.S.A.
- Exports of various kinds from Argentine, 1910, and import into Great Britain, statistics, *A. Seymour Jones* - - - - 4638
- Formalin unsuitable for preservation of, *A. Seymour-Jones* - - - - 4531
- FORMIC-MERCURY PROCESS (for softening hides and sterilising for anthrax):
- Adopted in various tanneries, and under consideration by Governments of Italy, Germany and France, *A. Seymour-Jones* 4778-83
- Adoption by leather firms, question of, *Prof. H. R. Procter* - - - - 6145-7

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- Advantages to leather trade, *A. Seymour-Jones*, 4770-5; *Prof. H. R. Procter*, 6148-51, 6153, 6182-3; *Dr. J. G. Parker*, 6559; *Sir W. H. Davies*, 6939-40
- Advantage from shipowners' point of view, *A. Seymour-Jones* - - - - 4795-7
- Anthrax spores will be killed by, and consequently foot-and-mouth disease germ, *Dr. J. G. Parker* - - - - 6557
- would be Approved if strong enough, *J. McPhail* - - - - 5628-30
- Best solution, *Dr. J. G. Parker* - - - - 6499
- Bi-chloride of mercury practically the only thing fatal to anthrax germs, but others might be experimented with, *Prof. H. R. Procter* - - - - 6163-4, 6167-8
- Board of Trade Department should be formed to superintend importation and sworn consular certificate should be insisted on, *A. Seymour-Jones* 4798-800, 4927
- Brought before Board of Agriculture and Home Office, *A. Seymour-Jones* - - 4789-91
- Carriers might object, *Dr. J. G. Parker* 6542-3
- Certificates would be more reliable, *A. Seymour-Jones* - - - - 4881-2
- Cost, *A. Seymour-Jones*, 4715-6, 4748-51; *Prof. H. R. Procter*, 6068, 6075-6, 6131-4, 6159; *Dr. J. G. Parker*, 6487-8, 6492, 6548-56, 6557-8, 6577-8, 6583-5; *Sir W. H. Davies*, 6965-7
- Effect on hides, *J. McPhail*, 5477-80, 5686-92; *Prof. H. R. Procter*, 6069-70, 6090-4, 6100, 6120-2, 6156-8; *Dr. J. G. Parker*, 6493-5; *Sir W. H. Davies*, 6942
- the only Efficient method, *Prof. H. R. Procter* - - - - 6061-7
- Experimental treatment at some ports first: Approved, *Dr. J. G. Parker*, 6560, 6579-80, 6581; *Sir W. H. Davies* - - - - 6969-71
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- Experiments and success, *A. Seymour-Jones*, 4711-3, 4714-5, 4739-43; *Dr. J. G. Parker*, 6490, 6526-7
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- Exporters to carry out, and question of getting tanners to pay more on account of, *A. Seymour-Jones* - - - - 4885-92, 4902
- Exporters might object at first, *Prof. H. R. Procter*, 6197-202; *Dr. J. G. Parker*, 6544-7
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- Freight would increase, *Dr. J. G. Parker* 6591-3
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- Insistence on, in countries with disease, recommended, and countries to which insistence would apply, *Dr. J. G. Parker* 6613-23
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- Method of bringing about, *Sir W. H. Davies* - - - - 6968-75
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- Would be welcomed, *Sir W. H. Davies* 6938, 6956-8
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- One-eighth per cent. of formic acid sufficient, *Dr. J. G. Parker* - - - - 6490-1
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- at Port of export: Advocated, *A. Seymour-Jones* - - - - 4713
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- Salting after: Necessary, *Dr. J. G. Parker* - - - - 6557
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- Suitable for all kinds of skins, *Prof. H. R. Procter* - - - - 6096-101
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- FROM RUSSIA:**
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- Uselessness of perchloride of mercury, carbolic acid, or sulphurous-acid gas, *A. Seymour-Jones* - - - - - 4710-1
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 with Foot-and-mouth disease, imports, 1880, *A. W. Anstruther* - - - 27
 no Importation of, into England or America, *A. Mansell* - - - 3425-6
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 Slaughter, statistics, 1911, *A. W. Anstruther* - 70-3

Sheep's heads, import:

- Danger attaching to, *A. W. Anstruther*, 132; *S. Stockman*, 899, 900, 930-2; *J. Crowhurst*, 5725
 Hides more dangerous, *Sir E. H. St. L. Clarke* 1461
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Sheepskins:

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 Disinfection with formic acid and mercuric acid particularly advantageous for, *Prof. H. R. Procter* - - - 6135, 6139
 Smyrna sorting warehouses, deaths from anthrax frequent, *Dr. J. G. Parker* - - 6632

WOOLED:

- Disinfection with formic acid and bichloride of mercury:
 could be Adopted, *Prof. H. R. Procter* 6111, 6114
 Wool would be sterilised by process, *Prof. H. R. Procter* - - - 6111-12
 many Imported from the Argentine and France, *Prof. H. R. Procter* - - - 6113
 Stripped of wool at Mazamet, France, and re-cured, *Prof. H. R. Procter* - - - 6113

- Sheep pox, virus, no law against importation or manufacture of, and permission of Board should be made necessary, *S. Stockman* - 949-52
 Sheppey, outbreak, *A. W. Anstruther* - 259-60
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Ships:

- Carrying hides, a source of infection for foot-and-mouth disease, *A. Mansell* - - - 3455

DECKS:

- Disinfection:
 with Chloride of lime advocated, unless hides disinfected at port of embarkation, *J. McPhail* - - - 5492-4
 would be Easy, *H. C. Somerville* - - 5282
 Hides as deck cargo only, *see under Hides*.
 Washing sufficient, *H. C. Somerville* 5336, 5348-9

DISINFECTION:

- after Carrying cargoes of diseased animals, *W. W. Smart*
 1861-5, 1885, 1908-9, 1910-12, 1919-33
 for Foot-and-mouth disease and anthrax, difference between requirements, *S. Stockman* - - - 530-6, 702-6
 Recommended, and possible methods, *S. Stockman* - - - 536, 707-13, 832-4

HOLDS:

- Carrying diseased hides, danger of infection from, *Col. B. B. Sapwell* - - - 5985
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 in Addition to disinfection of hides at port of embarkation, desirable, *Col. B. B. Sapwell* - - - 5986-91
 Advocated, *Col. B. B. Sapwell* - - - 6054
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 Spraying with, would not involve so great a delay as lime-washing, *C. E. Tankard* - - - 2509-11
 Suggested, *Sir J. McFadyean* - - - 2742-6
 with 2 per cent. Carbolic, possible, *O. Caygill* - - - 3915-20, 4025-9
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 Enforcing, question of, *Prof. J. Penberthy* - - - 2878-80
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- Possible after split cargoes, but would fall hardly on shipping people, *C. E. Tankard* - - - 2446-8, 2475-7
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- Question of, *A. W. Anstruther* - 316, 343-7, 377
- Question of, in case of hides being disinfected at port of importation, *Prof. H. R. Procter* - - - 6135
- Regulations in Ireland, *R. Cantrell* - 3820-2
- by Sulphur fumes, question of, *R. Cantrell* 3825-7
- Unnecessary if hides properly disinfected at port of embarkation, *A. Seymour-Jones*, 4726-7; *J. McPhail*, 5485-6, 5494; *Dr. B. Bang*, 6912-3
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- Mixed cargoes most undesirable, *Prof. J. Penberthy* - - - 2881-3
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- Split cargoes, difficulty of disinfection in cases of, *S. Stockman* - - - 536
- Shorncliffe Camp, live cattle brought to, suspected as cause of outbreak among lambs near, 1891, *J. E. Quedstedt* - - - 3684-91
- Shrewsbury, case of consignment of dry hides from Paris, *A. Mansell* - - - 3343-7, 3351

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- Contagious Diseases Committee, representative, see *Mansell*, A.
- Veterinary inspector, appointment to be approved by Board of Agriculture in London, question of, *A. Mansell* - 3375-6
- no Outbreaks during last few years, *A. Mansell* - - - 3352

Siberia:

- Anthrax, indigenous, *A. Seymour-Jones* - - 4708

HIDES:

- Baling of, *A. Seymour-Jones* - - - 4640
- Dried, imported from, *A. Seymour-Jones* - 4531
- Siegel, Dr., of Berlin, foot-and-mouth disease attributed by, to visible microbe, *S. Stockman* 860, 955-8, 1057-8
- Sittingbourne, outbreak, 1892, *A. W. Anstruther* 83, 259

Skins:

- Consumption in various countries, *A. Seymour-Jones* - - - 4532
- Countries from which imported, *A. Seymour-Jones* - - - 4532
- Exports from the Argentine, 1910, and import into Great Britain, statistics, *A. Seymour-Jones* - - - 4638
- Import, dangers attaching to, and consideration of question necessary, *A. W. Anstruther* 40, 47, 85-6
- see also Goatskins and Sheepskins.
- Slate-slabs, imported from Portugal packed in hay or straw, *C. E. Tankard* - - - 2272

Slaughtering:

- Act of 1896 re, *A. W. Anstruther* - - - 28, 34-5
- Adoption in other countries impossible, *Prof. J. Penberthy* - - - 2988-9
- Lord Carlingford quoted re, 1884, *A. W. Anstruther* - - - 21
- on Continent, in initial cases only, *Sir J. MacFadyen* - - - 2754
- Employment as means of stopping disease, particulars re, *A. W. Anstruther* 259-61, 304-6
- Extension advocated, *W. C. Barling* 5167-8, 5188, 5197
- Isolation preferable in some cases, *A. W. Anstruther* - - - 84
- Isolation preferred, *R. Morris* - - - 5420
- Local veterinary officer no power to order, *S. Stockman* - - - 733-4

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- not absolutely Necessary for checking of disease, *A. W. Anstruther* - - - 253-5, 261
- of Pedigree stock, isolation sufficiently effective and less costly than, *Col. B. B. Sapwell* 6045-51
- owers and duties of inspectors re, *Sir E. H. St. L. Clarke* - - - 1093, 1408-11
- POWER TO LOCAL AUTHORITY:**
- Advocated, *W. H. Williams* - - - 3625-8
- Objection to, *J. E. Quedstedt* - - - 3705
- Question of, *J. Crowhurst* - - - 5793-6
- Practice re, *W. W. Smart* - - - 1966-71
- Practised in original cases, but isolation would be carried out if disease widespread, *Sir E. H. St. L. Clarke* - - - 1424-9
- Preferred to isolation to start with, *S. Stockman* - - - 608
- Preferred to isolation under circumstances of recent outbreaks, *Prof. J. Penberthy* - - 2987
- Procedure, *Sir E. H. St. L. Clarke* - - - 1093
- Regulations approved, *R. Cantrell* - - - 4484-8
- Statistics, 1911, *A. W. Anstruther* - - - 70-3
- VALUATION:**
- Procedure, *W. W. Smart* - - - 1987-91
- Provision made for arbitration, *A. W. Anstruther* - - - 142-4
- full Value given for animals, *A. W. Anstruther* - - - 142-4
- at Wharves, procedure, *W. W. Smart* 1849, 1854, 1870-1

Small-holders:

- Disease might not always be recognised by -
- Evening classes might be attended by, *Prof. J. Penberthy* - - - 3040

SMART, W. W., I.S.O., M.R.C.V.S., Superintending Veterinary Inspector, Board of Agriculture and Fisheries:

1463-527, 1829-2064, 6983-7031

ANIMALS, IMPORT:

- no Cases of foot-and-mouth disease imported since 1903 - - - 1899-900, 1935, 1951-2
- Cattlemen, powers re disinfection - - - 1854
- Continental certificate, valuelessness of 25 to 35 years ago - - - 1875-7, 1904, 1940-50
- no Danger of outbreak owing to, if regulations properly administered - - - 1953-62
- Diseased cargoes:
- Procedure in dealing with 1851-4, 1860-5, 1870-1, 1909-12, 1937-9
- Question as to possibility of preventing landing of - - - 1938-9
- English veterinary surgeons at ports of embarkation would be impracticable 1887-90
- Healthy cargoes:
- Procedure in dealing with - 1847-50, 1909
- Staff of inspectors sufficient - - - 1878-80
- Hides, distribution - - - 1881-4, 1895
- Inspection at ports of embarkation in U.S.A. and Canada - - - 1891-4
- Procedure before and after 1871- - - 1866-9
- Procedure at wharves 1847-54, 1860-9, 1870-3, 1902, 1909-12, 1936-9
- Wharves in Great Britain - - - 1849

ARGENTINE:

- Cattle exports, inspection at ports - - - 1948
- Closed for export of cattle since 1903 - 1855-9
- Import of cattle from:
- Danger from animals themselves not great but from contagion by manure, persons' clothing, cargo, etc. - - - 1987-9, 6999
- Outbreak might occur on ship without being recognised as no veterinary surgeon on board - - - 7027-31
- Police and veterinary arrangements in crude state, and consequent danger of 6995, 7019-25
- Relaxation of restrictions not advocated 6983-7031
- Voyage longer than incubation period 6985-7, 6996-8, 7006-12
- Question of obtaining information re freedom from disease - - - 1896-8

SMART, W. W., I.S.O., M.R.C.V.S.—*continued.*

BOARD OF AGRICULTURE:

- Inspectors, duties at outbreaks and powers *re* slaughtering - - - 1966-71, 1979-82
- Scientific investigation of diseases by, increase desirable - - - 1509-16, 1518
- Veterinary staff:
 - no Inspectors at foreign ports - - - 1475-6
 - Particulars *re*, numbers, etc. - - - 1467-81
 - Port inspectors, instruction given to, *re* foot-and-mouth disease - - - 1490
 - Veterinary surgeons employed as local veterinary inspectors on retaining fee - - - 1478-81, 1491-8

Cattle, import from countries with disease prohibited - - - 6984-5, 7019

FOOT-AND-MOUTH DISEASE:

- Animals susceptible to, but not having contracted, as "carriers," improbable - - - 7014-6
- Area, present, approved - - - 1983-6
- Attributed locally to cleaning out of rhynes and interference with old buildings - - - 2036-45, 2049-50

Board's regulations:

- Assistance given by agriculturists - - - 2028-9
- no real Difficulty in enforcing - - - 2018
- no Case due to imported cattle since 1903, and no danger if regulations properly administered - - - 1899-900, 1935, 1951-62

- Diagnosis easy at certain stage, but more difficult at preliminary and later stages - - - 1519-22
- Incubation period - - - 6987
- not Indigenous - - - 2034-5

International co-operation:

- Desirable - - - 1525
- first Suggested at Veterinary Congress, 1899 - - - 1525-7, 1829

Outbreaks:

- Carrying out of instructions can only be enforced by police - - - 1835-41
- Country will always be liable to, periodically - - - 2058-64
- Distance from original outbreak, question of - - - 2000-1, 2025
- Inspection of animals in neighbourhood, system and advantages of - - - 1971-8
- Local veterinary inspector should be kept away - - - 1500-2
- Measures taken by Board on - - - 1832-42, 1965-82, 1992-2001

- Precautions against spread of infection - - - 1966-2000, 2003, 2004-7, 2009, 2021-3
- Spontaneous, impossible - - - 2047-8

- Period at which animal ceases to be a source of danger, further investigation necessary - - - 2051-4

- Period at which infected animals can transmit infection, further investigation necessary - - - 2051-4

Slaughtering:

- Practice *re* - - - 1966-71
- Valuation of animals - - - 1987-91

Symptoms, Board of Agriculture quoted *re* - 2014

Virus, period of vitality:

- Case where germ lay dormant for about 11 months heard of - - - 2052-3
- further Investigation necessary - - - 2051-4
- Longer than generally supposed - - - 2036-44

HIDES:

- Export to America - - - 1881, 1895, 1913-8
- Salting, prevention of communication of disease would depend on extent of - - - 1914-5
- Knackers and slaughtermen, extension of compulsory notification order to, desirable - - - 2019-20
- Local Authorities, no difficulties with - - - 2031-2
- Middlezoy, Manor Farm outbreak, particulars *re* - - - 1831-8
- Ripon outbreak, wire-netting erected for rabbits - - - 2024

RYE:

- Outbreak, number of Board's inspectors - - - 1470, 1478
- Sheep, apparent case of foot-and-mouth disease caused by grass called "squirrel-tail" - - - 1522-3

SMART, W. W., I.S.O., M.R.C.V.S.—*continued.*

- Ships, disinfection after carrying cargo of diseased animals - 1861-5, 1885, 1908-12, 1919-33
- Slaughtering at wharves, procedure - - - 1849, 1854, 1870-1

VETERINARY INSPECTORS:

- Appointment, Board should have power to confirm and veto - - - 1843, 2033
- no Instructions sent to, *re* symptoms of disease, etc., and objections to - - - 2013, 2015-7
- Over-reporting, dangers in - - - 2030
- Post-graduate course:
 - Advocated - - - 1482-9, 1499, 1517
 - Study at foreign university would be desirable, but financial difficulty - - - 1503-8

Smithfield Market, *see under* London.

Smyrna, warehouses for sorting sheepskins, deaths from anthrax frequent, *Dr. J. G. Parker* - - - 6632

Somerset:

COUNTY COUNCIL:

- Representative, *see* Williams, W. H. - - - 3612-663
- Veterinary surgeon, outbreak on Manor Farm, Middlezoy, not diagnosed at first as foot-and-mouth disease, *E. Rawle* - - - 1549-58, 1742-3, 1777, 1802-7
- Hares not plentiful, *W. W. Smart* - - - 2008

OUTBREAKS:

- 1885, *W. W. Smart* - - - 2038
- Cleaning out of rhynes as cause of:
 - Doubted, *Prof. J. Penberthy*, 2809; *W. C. Barling*, 4977-80, 5023, 5226-31
 - Impossible, *S. Stockman*, 472-3, 695-6; *Sir J. McFadyen*, 2537, 2542, 2568, 2635-7
 - Local belief in, *E. Rawle*, 1726-9; *Sir E. H. St. L. Clarke*, 1358-60, 1385-7; *W. W. Smart*, 2036, 2045, 2049-50; *W. H. Williams*, 3632-3
 - Question of, *A. W. Anstruther* - - - 76
- Diagnosis, proceedings, *S. Stockman* - - - 731-2
- Distance between outbreaks, *R. Waite* - - - 3326-26A
- must be Due to material from abroad, *W. C. Barling* - - - 5019
- Infection could not have been air-borne, *S. Stockman* - - - 436-8
- Lesions of cow-pox found along with those of foot-and-mouth disease, *S. Stockman* - - - 1068
- Movement of poultry restricted in one case, *A. W. Anstruther* - - - 83
- Particulars *re*, *A. W. Anstruther* - - - 249, 348
- Pigeons from the Continent a likely cause of, *F. P. Matthews* - - - 6465
- Saliva carried about by cur, *S. Stockman* - - - 414
- Spread, question of method, *S. Stockman* - - - 685, 694-6, 729-30, 835-8

see also names of places.

SOMERVILLE, HUGH C., of Messrs. GIBSON

- & Co., Shipowners, Leith: - - - 5253-365
- Calves' heads and hoofs, import at Leith, no special examination of - - - 5323-5

CALVES IN THEIR SKINS, IMPORT TO LEITH:

- Distribution to butchers - - - 5326, 5357
- Government label on - - - 5317-22, 5350-6
- Handled by same men as hides, and no regulation *re* washing in between - - - 5337-40, 5361-5

- Inspection on arrival - - - 5304-13
- Flemish funeral horses, import - - - 5330

GIBSON & Co.:

- Calves in their skins, carriage of - - - 5285-303
- Decks washed with hose after carrying hides - - - 5273-6
- no Feeding-stuffs carried on deck inwards - - - 5283
- Landing of hides on quay at Leith, and separation from other merchandise - - - 5269-71, 5284-7

- Wet salted hides and occasionally dry goats' skins carried, but always on deck away from food-stuffs - - - 5255-68, 5277, 5347
- Glue-stock, import - - - 5331-5
- Hides, wet and salted only, shipowners would not object - - - 5341-3
- Horses, import, feeding stuff and litter not brought on shore - - - 5344-6

SOMERVILLE, HUGH C.—*continued.*

SHIPS:

- Decks, disinfection would be easy, washing sufficient - - - 5282, 5336, 5348-9
Holds, difficulty of disinfection owing to delay - - - - - 5278-81

South Africa:

HIDES:

- Experimental treatment with formic acid and mercuric acid at port would be approved, *Dr. J. G. Parker* - - - - - 6604-5
Imported into Denmark, *Dr. B. Bang* - - - 6679
Method of drying, on outland farms unsatisfactory and leads to waste, *Dr. J. G. Parker* - - - - - 6496
Stock for, obtained from Australia owing to quarantine regulations in England, *A. Mansell* - - - - - 3541-2

South America:

HIDES:

Dry:

- Small importation of sun-cured, *C. E. Tankard* - - - - - 2298
Frequently brought via Antwerp, possible contagion with animals or skins affected with foot-and-mouth disease, *C. E. Tankard* - - - - - 2391-4
Imported into Denmark, *Dr. B. Bang* - - - 6679
Large proportion imported from, *Sir W. H. Davies* - - - - - 6937-8
Method of drying:
in Inland unsatisfactory and leads to waste, *Dr. J. G. Parker* - - - - - 6496
no Waste from, *Dr. J. G. Parker* - - - 6585, 6589
Method of exporting, *A. Seymour-Jones* - - 4532
Import of pedigree cattle from England prohibited, *F. P. Matthews* - - - - - 6437
Sheepskins, method of exporting, *A. Seymour-Jones* - - - - - 4532

Soya beans:

Import of:

- Increase in, and method of packing, *C. E. Tankard* - - - - - 2357-65
from India, *C. E. Tankard* - - - - - 2285
Mixing of, with hides at ports of embarkation, *A. Seymour-Jones* - - - - - 4658-61, 4687
Introduction of anthrax into Scotland with, *S. Stockman* - - - - - 536

Soya cake, see under Cakes.

Spain:

- Animals, imports from, prohibited, formerly, *A. W. Anstruther* - - - - - 23, 32
Hides from, average weight, *A. Seymour-Jones* - 4532
Spinola, reference, *Dr. D. A. de Jong* - - - 6358
"Squirrel-tail" grass, apparent case of foot-and-mouth disease at Rye caused by, *W. W. Smart* - - - - - 1522-3
Stansted, outbreak, 1900, *A. W. Anstruther* - - 60
Stevenson, Dr., Newcastle-on-Tyne, report on trade in calves in their skins, *A. W. Anstruther* - - - - - 90

STOCKMAN, S., M.R.C.V.S., Chief Veterinary

Officer to the Board of Agriculture: - 398-1087

ANTHRAX:

- Animals dying of, number - - - - - 597
Cases known to have been brought in by imported oats - - - - - 456-60, 595-7
Dangerous character of - - - - - 902-4
Disinfection of ships most important - - - 530-6
Experimental feeding of animals with suspected food stuffs, positive results seldom obtained - - - - - 639
Flies, infection through - - - - - 430
Hides, danger from - - - - - 600
Introduction into Scotland with soya bean - 536
Spore, difficulty of destroying - - - - - 602
Arable land, allowing of, to go down to grass, question of, as cause of disease - - - - - 468-71

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- Foot-and-mouth disease, prevalence of - 567-8
Possible source of outbreaks in England - 480

STOCKMAN, S., M.R.C.V.S.—*continued.*

- Bags for fodder, possible means of disseminating disease - - - - - 463-4
Belgium, importation of milk, regulations - 851
BIRDS:
Possible means of disseminating disease - 414, 518-9

- Question of carrying disease by, could be settled by experiment - - - - - 863

BOARD OF AGRICULTURE:

- should have Power to make it compulsory for larger number of people to report disease - - - - - 735
Staff sufficient at present, question of wide-spread outbreak - - - - - 1078-81
Butter, danger attaching to - - - - - 420

CAKE:

- Danger that of indirect contamination - 776-81
Disinfection impossible - - - - - 597

CALVES IN THEIR SKINS:

- Feet and heads should be left on - 529, 768-73, 857-8
Guarantee of freedom from disease at abattoirs, suggested - - - - - 527-9
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Canada, freedom from foot-and-mouth disease - 791

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- Imported, danger attaching to - - - 420-1, 527
Washed up, dissemination of disease by, improbable - - - - - 465-7
Cats, susceptibility to disease and possible means of disseminating - - - - - 414, 751-2
Cattle, live, alteration of restriction of importation, disease might be spread all over country - - - - - 827-9
Cattle plague, Russian Steppes the source of - 512-5
Cheese, danger attaching to - - - - - 420

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- Foot-and-mouth disease, eradication possible - - - - - 613-4
Hay Orders enforced by countries against each other, although full of disease - 850-1
Denmark, foot-and-mouth disease, measures taken on English lines and success of - 482, 495-6
Ditches, cleaning of, not considered cause of outbreak - - - - - 472-3
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- Prohibition, question of - - - - - 597-8
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- possible Means of disseminating disease - 430, 673-9
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FOOT-AND-MOUTH DISEASE:

- Abortion not caused by - - - - - 1018-20
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- Competency of veterinary officers, question of - - - - - 938-44, 985-8
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STOCKMAN, S., M.R.C.V.S.—*continued.*FOOT-AND-MOUTH DISEASE—*continued.*

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1911, cost to Government	1006-11
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TO INQUIRE INTO

FOOT-AND-MOUTH DISEASE.

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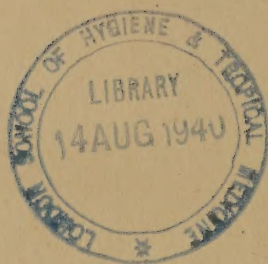
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